

The United States

MILLER

AND THE MILLING ENGINEER.

Fifteenth Year.—No. 2.

MILWAUKEE, FEBRUARY, 1890.

Subscription Price, \$1.00 Per Year.

STILWELL & BIERCE MFG. CO.

—* DAYTON, OHIO, U. S. A. *

MILLING ENGINEERS

Manufacturers of the Celebrated ODELL ROLLER MILLS and a full line of

Flour & Corn Mill Machinery.

MILLS BUILT ON THE

ODELL SYSTEM.

Contracts taken for mills of any size, large or small, and results GUARANTEED.

Cawker's American Flour Mill and Grain Elevator Directory for 1890-'91

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Will be issued March 1, 1890. Price Ten Dollars. It will be the most complete of any we have yet published; and will possess many new and valuable features. Send in your orders *now*.

Address,

E. HARRISON CAWKER, MILWAUKEE, WIS.

Will Certainly Give You the Order

After a Thorough Trial, Giving Perfect Satisfaction,

THE RICHMOND Grain Cleaning Machinery

AND

BRAN DUSTERS.

TESTIMONIALS.

SHELLABARGER MILL & ELEVATOR CO.

DECATUR, ILL., January 8, 1890.

RICHMOND MANUFACTURING CO., Lockport, N. Y.:

Gentlemen:—We hand you herewith our Check No. 5160 for \$..... in payment of the enclosed invoice, which you will please receipt and return to us. We have given your machine a thorough trial during the past two months, and are pleased to report that it is giving perfect satisfaction in every respect. We are using some eight or ten Separators in connection with our elevators, and we are frank to state, that your machine is doing us better work than any other machine we have in use, and should we have occasion to put in another machine, will certainly give you the order. Wishing you success, we are

Yours truly,

SHELLABARGER MILL & ELEVATOR CO.

W. L. SHELLABARGER, Secretary.

H. C. COLE MILLING CO.

CHESTER, ILL., December 19, 1889.

RICHMOND MANUFACTURING CO., Lockport, N. Y.:

Dear Sirs:—We are using of the "Richmond" machines, one Warehouse Separator, four Scouring Machines and two Bran Dusters, all of which are doing good work. We know of no company who put better work on their machines than the Richmond.

Yours truly,

H. C. COLE MILLING CO.,

Per H. C. COLE.

RICHMOND MANUFACTURING CO.

LOCKPORT, N. Y., U. S. A.

THE LANE & BODLEY CO.,

MANUFACTURERS OF

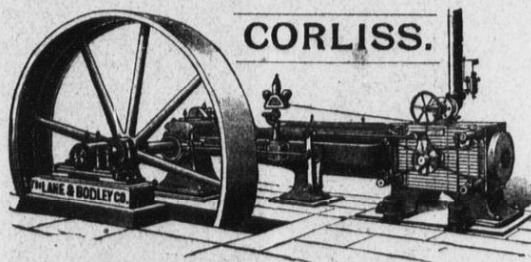
AUTOMATIC CUT-OFF

ENGINES

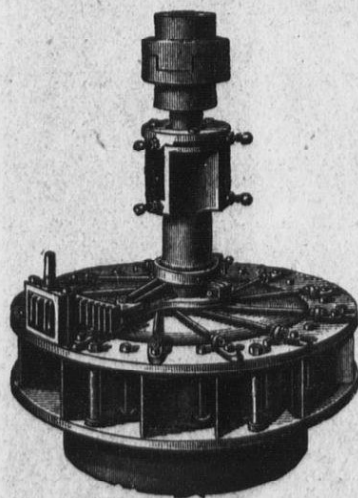
From Heavy Patterns and of Unexcelled Workmanship.

Steel Boilers, Feed Water Heaters, Shafting, Pulleys and Gearing.

THE LANE & BODLEY CO., cor. John & Water Sts., CINCINNATI, O.



CORLISS.



Leffel Water Wheel

Made by JAMES LEFFEL & CO.

The "OLD RELIABLE" with Important Improvements, making it the

Most Perfect Turbine now in Use.

Comprising the LARGEST and the SMALLEST Wheels, under both the HIGHEST and LOWEST Head in this country. Our New Illustrated Book sent free to those owning water power.

Write us for NEW PRICES before buying elsewhere. New shops and New Machinery are provided for making this Wheel. Address,

JAMES LEFFEL & CO.,

Springfield, Ohio, or 110 Liberty St., New York.

* THE *

"WESTERN" MILL SHELTER.

The most Compact, Durable, Best Sheller and Best Cleaner.

Takes up but little room, runs at low rate of speed, requires no attention. It is in every respect the

Best Sheller ever offered to the Public.

Please mention this paper. Write for full particulars to

UNION IRON WORKS, - DECATUR, ILL.

Mfrs. of "Western" Shellers, Cleaners, Separators, and all kinds of Elevator Machinery.



"The Proof of the Pudding IS IN THE EATING."

MINNEAPOLIS, MINN., Feb. 1, 1890.

E. P. ALLIS & CO., Milwaukee, Wis.:

Gentlemen: After giving your Purifiers, Centrifugal Reels and Flour Dressers a thorough trial, we are convinced that they are leaders in this class of mill machinery. In point of workmanship they cannot be excelled, and their capacity seems to be almost unlimited. Wishing you the success you most certainly deserve,

We remain, yours very truly,

D. R. BARBER & SON.

Flour Mill Machinery of All Kinds.

Complete Mills of All Sizes.

Almost as Cheap as the Cheapest, and Unrivalled in Excellence.

SEND FOR CIRCULARS. PRICES. ETC.

EDW. P. ALLIS & CO.

RELIANCE WORKS,

MILWAUKEE, - WISCONSIN.

The United States MILLER

AND THE MILLING ENGINEER.

Fifteenth Year.—No. 2.

MILWAUKEE, FEBRUARY, 1890.

Subscription Price, \$1.00 Per Year.

THE PURIFIER PERFECTED.

THE machine we illustrate on this page is no stranger to the public and does not come before it as an untried device asking for a confidence that it has not earned. The Reliance Purifier may be found in the best mills in all parts of the country, and from the start its many superior features have been very generally recognized. The object in again placing a description of it before our readers is to call attention to a few slight changes which make it even better than it was in the beginning, and to show the care that has been taken by its manufacturers to overcome every reasonable objection that has been found against other machines of this class.

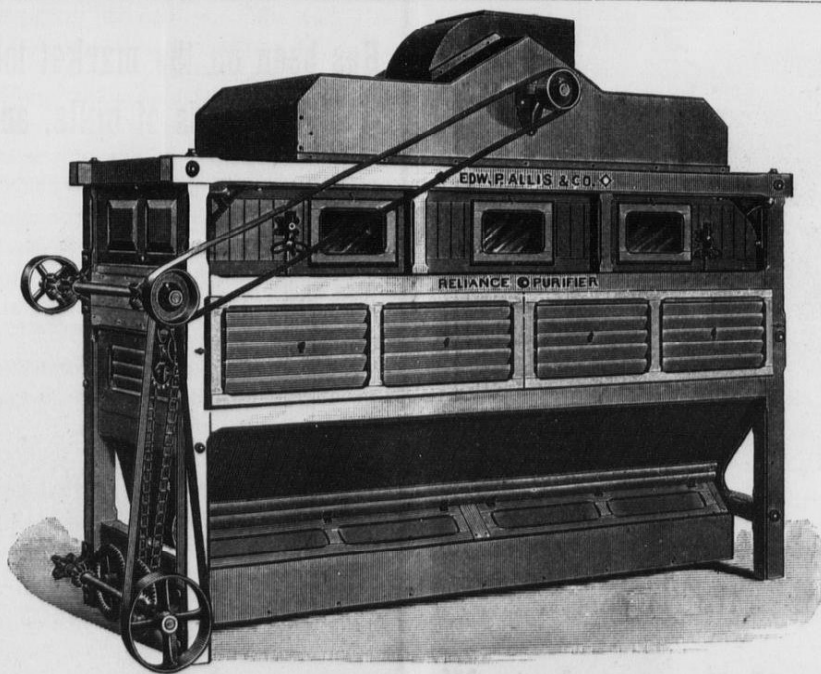
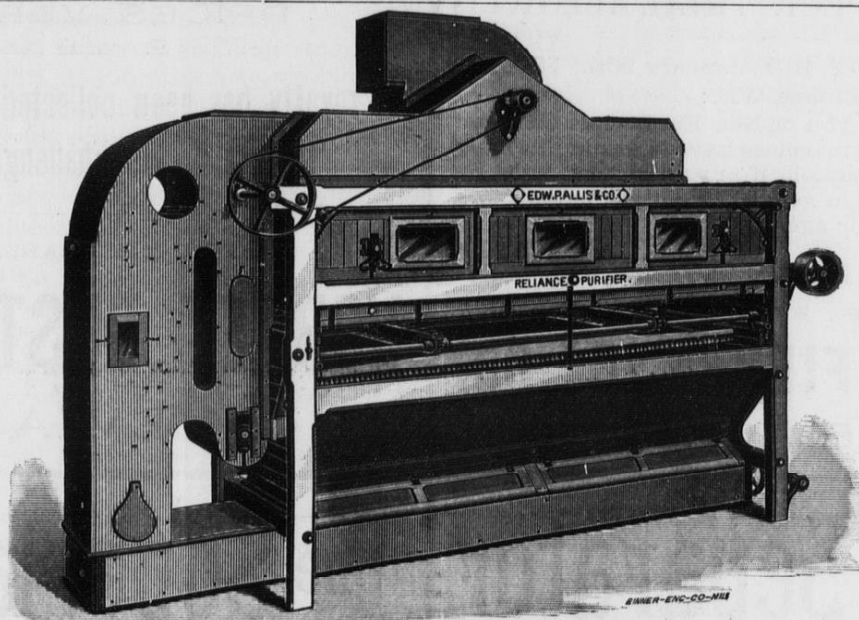
The distinguishing features of the Reliance Purifier have become pretty well known and are fully appreciated by millers. Perhaps the most important of these are the cloth cleaning device and the construction of the upper part of the machine. In previous purifiers, even in the best of them, a serious defect was found in the partitions and dust chambers above the sieve, which, while right enough theoretically, were in practice found to be nothing less than a nuisance. A long experience in the use of all kinds of purifiers had shown the manufacturers of the Reliance that this defect was a serious one and must be avoided if the purifier was to be perfected. In bringing out their new machine, therefore, this feature was one of the first to receive attention. The dust pockets and other obstructions were discarded and in their place is a perfectly clear and open space above the sieve, communicating freely with the fan chamber through ample passages so distributed and regulated by valves that the control of the suction on all parts of the cloth is absolutely perfect. This improvement on what had previously been considered the standard style of construction made its own argument with millers, and they have given it a unanimous and cordial endorsement.

The second vital point of difference between the Reliance purifier and its predecessors, one of even more importance than that already described, is in the cloth cleaning device. Experiments with various devices by numerous manufacturers pretty conclusively demonstrated that the traveling brush was the only practical and effective cloth cleaner, but the manner in which it was applied even in the best machines interfered with its efficiency. The cleaning action was not only imperfect, but by moving the brush from head to tail of sieve it was constantly mixing the different grades of middling, thus partially undoing the work of the cloth in repeating them into different grades. The obvious remedy for this was to cause the brush to travel crosswise of the sieve, and this improvement was embodied in the Reliance purifier and has done probably more than any other one thing to give this machine its success and popularity. As to the cleaning action upon the cloth, the cross-travelling brush has every advantage that can be claimed for the older style and it has the important additional advantage that mixing of the different grades of middlings is absolutely prevented. As first constructed, the Reliance brush embodied the stippling

principle, i. e., instead of wiping the cloth the cleaning was effected by the brush rising and pricking through it, then falling, traveling its own width and rising again, and so on until the entire surface of the cloth had been traversed. This was regarded by the majority of millers as a decided improvement, while others still believed in the brush with a continuous motion, but both agreed that the cross travel was indispensable to the best results with either kind of motion. To meet the demands of both classes the Reliance purifier is now furnished with a brush with either the continuous motion or the stippling motion as may be preferred by the purchaser, and in either

covered by the Consolidated Company's patents, to which they add the improvements here described which are controlled solely by themselves. Under these conditions nothing has stood in the way of developing their purifier to the highest degree of perfection. How far they have succeeded in this direction the most intelligent millers know too well to need telling.

Besides the marked improvements already described, there are minor features of this excellent machine which well deserve mention. The conveyors are the Reliance patent, with hollow iron shafts and reversible iron flights, which may be changed in a moment to carry stock in either direction by simply loosening a set-screw.



case the great advantage of the crosswise movement is secured.

The discussion of the brush movement naturally calls up the question of patents. On this subject it may be said that the manufacturers of this machine own in their own name patents which fully cover the stippling brush, and this principle cannot be used in any other purifier. In the case of the continuous brush motion, in order that no one might be deterred from purchasing their machine by fear of claims for infringement, they have secured a license from the Consolidated Middlings Purifier Co., of Jackson, Mich., under which they have the full right to use all of that Company's patents. This enables them to offer their customers absolute protection and to combine in their machines all the valuable features

The iron shaft ensures strength and a perfectly true running conveyor, the latter being impossible with wooden shafts having gudgeons in the end. The conveyor ends are of iron, and taken altogether this conveyor is the strongest and most durable that has yet been put on a machine of this kind. A simple device is provided by means of which the cloth may be tightened from the outside while the machine is in motion. The fan is placed farther from the cloth than in the ordinary purifier, a change which gives a more uniform suction on all parts of the cloth. By means of the blinds at the sides of machine the admission of air to the sieve is regulated, and when necessary the suction may be shut off at the head of sieve and all of the air taken through the other end.

The aspirator attachment used on the Reliance Purifier is another departure that has met with great favor. Heretofore the aspirator has been merely a suction on the tail of a sieve machine, which was of very little, if any, benefit. The Reliance Aspirator is in reality a complete coarse middlings purifier which purifies and makes perfect separations on the coarse middlings and tailings that go over the end of the sieve. Practically the addition of the aspirator makes two machines in one, and for small mills it is probably the best, cheapest and most satisfactory combined machine that has yet been devised. It is also used with the highest satisfaction for handling coarse middling in large mills. The object of the aspirator is to enable the miller to clothe the sieve fine enough to ensure clean middlings passing through the cloth and permit the coarser middlings containing the impurities to pass over the tail of the sieve. The aspirator will separate the impurities from the middlings, making one product poor enough for feed and the other in excellent condition to go to the rolls. In the ordinary method of purifying good middlings pass over with the tailings and go to the rolls, with the result that the impurities as well as the middlings are reduced, making the subsequent separations much harder. The advantages of the aspirator attachment will be readily appreciated by millers without further description.

The general design, construction and finish of these machines are worthy of the highest praise and it is generally admitted that nothing finer in this line has ever been put into a mill. The miller will find in them every element necessary to meet the views of the most exacting purchaser, not even the most insignificant detail having been slighted in the least degree for the sake of cheapness. The buyer may be certain of securing everything that can be accomplished as the result of long experience, careful study of the requirements and a conscientious desire on the part of the manufacturers to give full value for the money received.

Further particulars concerning these superior machines may be obtained by addressing Messrs. Edw. P. Allis & Co., Milwaukee, Wisconsin.

HOW TO TELL GOOD OATS.

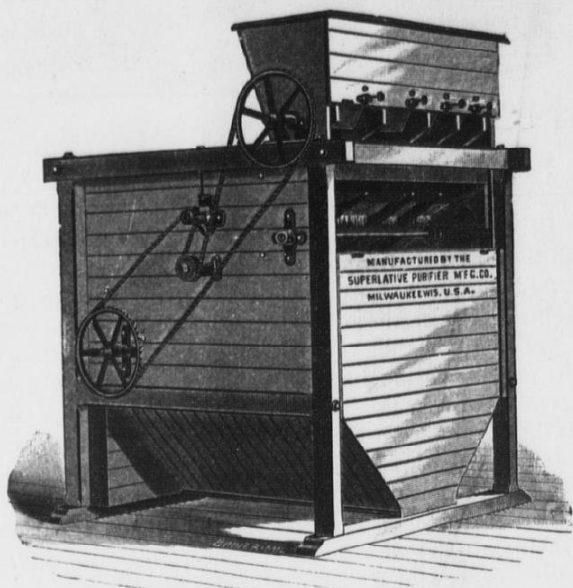
Good oats are clean, hard, dry, sweet, heavy, plump, full of flour, and rattle like shot. They have a clean and almost metallic luster. Each oat in a well-grown sample is nearly of the same size. There are but a few small or imperfect grains. The hard pressure of the nail on an oat should leave little or no mark. The kernel when pressed between the teeth should clip rather than tear. The skin should be thin. The size of the kernel will be less in proportion than the skin is thick. The color of the oat is not very material, but white oats are generally thinner in the skin than black. Again, black oats will grow on inferior soils. Short, plump oats are preferable to large, long grains. Bearded oats must have an excess of husk. Oats are not necessarily bad because they are thin-skinned or bearded; but they must contain a less amount of flour per bushel than thin-skinned oats without beards.

THOROUGHLY TESTED AND FOUND JUST AS REPRESENTED.

THE NEW ERA SCALPER

(Manufactured under Patents No. 420,723, 420,802, 420,803.)

Does not scour the bran or pulverize middlings, increasing 'patent' flour and improving other grades.



Occupies small space. Requires little power. One machine will handle 4 breaks in 100 bbl. mill.

Has greater capacity and does better work than any other Scalper manufactured.

GUARANTEED IN EVERY RESPECT. TRIAL ALLOWED

MILROY, IND., January 20th, 1890.

SUPERLATIVE PURIFIER MFG. CO., Milwaukee, Wis.:

Gentlemen—Enclosed find balance due you on New Era Scalper and Bran Duster I bought of you some time ago. The machines have been running daily now for five months; require very little attention, if any; run very light, requiring scarcely any power, and their work in general is entirely satisfactory in every respect—just as represented by your agent.

Respectfully yours,

G. J. BICKHART.

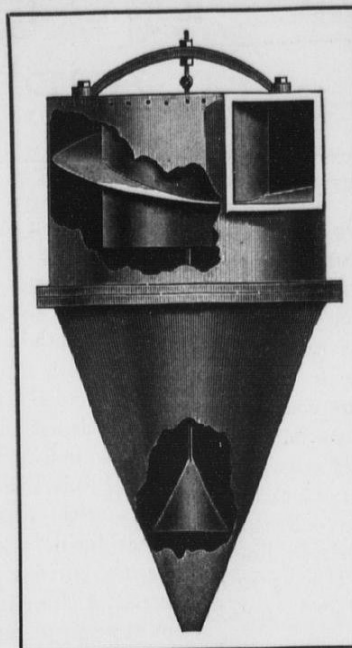
FOR CATALOGUE, PRICES, ETC., ADDRESS

SUPERLATIVE PURIFIER MFG. CO.
MILWAUKEE, WIS.

VORTEX DUST COLLECTOR

The best and most successful Dust Collector manufactured for Purifiers, Grain Cleaners, etc.

WE OWN PATENTS
COVERING THIS
COLLECTOR, AND
GUARANTEE
EVERY USER AND
PURCHASER
AGAINST ANY
INFRINGEMENT
SUITS, SHOULD
ANY BE BROUGHT.



THE WORK OF
THIS MACHINE IS
GUARANTEED,
AND WE
WILL ALLOW
ANYONE TO TEST
IT THOROUGHLY
BEFORE
PAYING FOR IT.

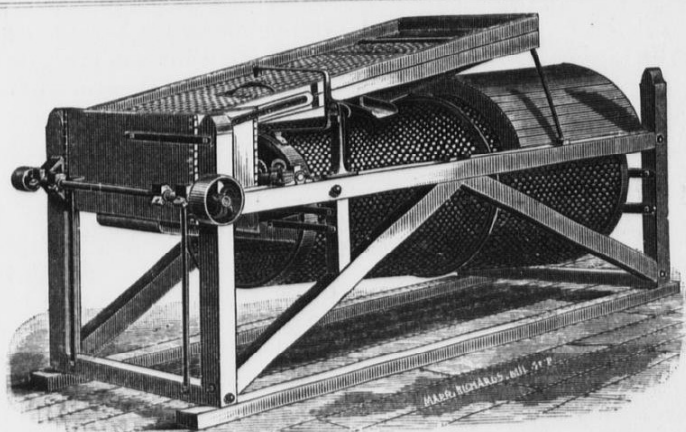
PRICES VERY REASONABLE.

No royalty has been collected on any Dust Collector of our manufacture. We challenge anyone to name an instance.

FOR CIRCULARS, PRICES, ETC., ADDRESS

VORTEX DUST COLLECTOR CO.,
MILWAUKEE, WIS.

Kurth Cockle Separator



Manufactured in three styles, either with or without Oat Separator attachment.

Thousands in use in all parts of the country. We guarantee these machines in every respect, allow trial where desired.

Our long experience in this line enables us to make a machine which is unequalled for thorough and effective work.

FOR CATALOGUE, PRICES, ETC., ADDRESS

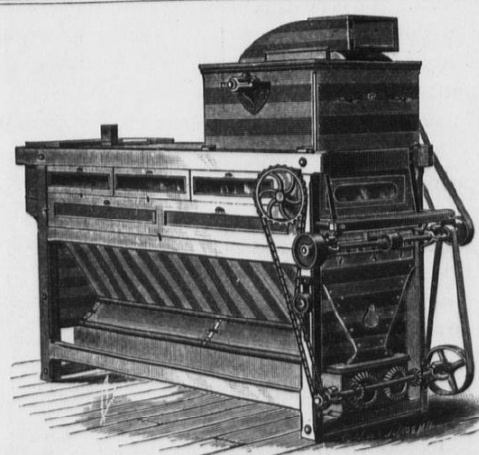
COCKLE SEPARATOR MFG. CO.,
MILWAUKEE, WIS.

WE ALSO MANUFACTURE

THE MORGAN SCOURER

The Superlative Purifier

Has been on the market for over five years and is running in hundreds of mills, and giving the best of satisfaction.



Guaranteed to do as good work as any Purifier manufactured.

WELL BUILT AND FINISHED. PRICES VERY REASONABLE.

We will allow any responsible miller a thorough trial of this machine. Its work speaks for itself.

FOR CATALOGUE, PRICES, ETC., ADDRESS

SUPERLATIVE PURIFIER MFG. CO.,
MILWAUKEE, WIS.

UNITED STATES MILLER
AND THE MILLING ENGINEER.

E. HARRISON CAWKER, EDITOR.

PUBLISHED MONTHLY.

OFFICE, No. 124 GRAND AVENUE, MILWAUKEE.
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To American subscribers, postage prepaid..... \$1.00
To Canadian subscribers, postage prepaid..... 1.00
Foreign subscriptions..... 1.50
All Drafts and Post-Office Money Orders must be made payable to E. Harrison Cawker.
Bills for advertising will be sent monthly, unless otherwise agreed upon.
For estimates for advertising, address the UNITED STATES MILLER AND THE MILLING ENGINEER.

[Entered at the Post Office at Milwaukee, Wis., as mail matter of the second-class.]

MILWAUKEE, FEBRUARY, 1890.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER AND THE MILLING ENGINEER. You will thereby oblige not only this paper, but the advertisers.

WE send out a number of SAMPLE COPIES of this issue. We solicit a critical examination of our Journal and invite you to subscribe. The price is one dollar per year. No premiums—no discount.

THE U. S. Agricultural Department report the winter wheat crop generally in fine condition for this season of the year.

AT the next annual meeting of the Millers' National Association a new constitution will be submitted for discussion and adoption.

THE Report of the Thirty-seventh Annual Meeting of the State Historical Society is at hand, and is highly interesting to those interested in early Wisconsin history.

WE regret to say that our Baltimore correspondent "Oriole" is confined to his bed by illness and consequently his usual letter which is always looked for with much interest by our readers does not appear this month.

A machine for sewing up export flour sacks when they are filled was patented some months ago and sold to Chicago parties, but has not been placed on the market yet. We are informed that the purchasers are at work perfecting the machine and have nearly succeeded in doing so. The last we heard of it the sewing was done with wire.

WE advertise elsewhere and offer for sale a work entitled "100 Lessons in Business." We do so more for the reason that we think the book useful in aiding business men in many ways than for the slight profit there is in it to us. We say without fear of contradiction that to the average business man it is "like silver," and to the expert it is "like gold."

ON the evening of Feb. 9th Mr. Ernest Allis, of Edw. P. Allis & Co., of this city, was married to Miss L. Winston, of Louisville, Ky. The wedding was a very elegant affair. The bride is very highly spoken of, both as to beauty of person and rare intellectual acquirements. The happy young couple will spend a few weeks in the South, and will then sail for Europe, where they will remain during the summer.

THE mutations of the popular will are always puzzling to the historian. Among the recent events which bring this thought to mind is the inter-state commerce law. It is only a short time ago that the popular will was sufficiently strong to secure its enactment and now petitions are being sent in to Congress from legislatures, boards of trade, commercial associations, corporations, individuals and even from associations of the "horny handed sons of toil."

WHAT is the matter with Kansas millers? It seems that they have been so busy making money that they have paid but little attention toward keeping up their Association. This ought not

to be said of that glorious State, that is wont to be first in almost everything. We trust that the officers of the Kansas Association will soon give notice of a meeting, and that when it convenes every mill in the State will be represented. Kansas is destined to be a great milling State, and it should have a first-class Association.

THE Michigan Millers' Association has been extremely fortunate in securing Mr. M. A. Reynolds of Stanton, Mich., as Secretary. He is evidently a gentleman full of energy and knows how to work to the best advantage. His labor is certainly one of desire for the prosperity of the trade in Michigan, for the trifling salary of \$300 per year voted by the Association at its last meeting can have little influence with a mill owner of his ability. We predict a brilliant future for the Michigan Miller's Association, and take pleasure in publishing elsewhere an extract from his recent address to Michigan millers.

CAWKER'S American Flour & Grain Elevator Directory for 1890-91 will be issued promptly March 1. Most of the millers' list is now in type and the work is progressing rapidly. More time, labor and money has been expended on this than on any previous one. The changes are innumerable. The lists of grain elevators, wholesale flour dealers, prominent bakers, exporters and importers, millwrights, mill-furnishers etc. are extended. The list of flour dealers alone is invaluable to every miller in the country. Orders should be sent in at once. Price \$10.00 per copy. Address E. Harrison Cawker Publisher, Milwaukee, Wis.

MISS Jessie Goll and John F. Kern were married Feb. 12, 1890, at the home of the bride's parents on Jackson Street, this city; Rev. Charles Stanley Lester officiating. An elaborate wedding dinner was served, after the ceremony. Mr. and Mrs. Kern left for New York, whence they will sail for Europe.

The bridegroom is the son of Mr. J. B. A. Kern the well known Milwaukee miller and a member of the firm of J. B. A. Kern & Son. The bride is the daughter of Mr. Goll one of the solid wholesale merchants of Milwaukee. We wish the young couple a long and happy life.

THE import tax on jute, we are happy to say will soon be entirely removed and the article will be placed on the free list. This will save millers not only much money, but a world of trouble. That this matter has been finally satisfactorily practically adjusted, is due in a great measure to the Millers National Association and the well directed efforts of Secretary Barry, in securing the united influence of millers in all sections of the country, calling the attention of members of Congress to their just demands. The milling press also deserves commendation for their unselfish labors tending to obtain the desired end and millers ought not to forget it.

A suggestive record is the one given herewith of the losses by fire of flouring mills and grain elevators in the U. S. and Canada for the month of January:

	Loss.
Dallas, Ga., (mill)	\$ 25,000
Greenwood, Ind., (mill)	25,000
N. Y. City Mills, (elevator)	25,000
Baltimore Lower Canton Elevator	580,000
West Indianapolis, (Ind.) Hominy Mill	75,000
Hindesdale, Ark., (mill)	20,000
Winnebago City Mills, Minn.	10,000
Payne's Mills, Ont.	10,000
Vermillion S. D., (mill)	15,000
Muskegon, Mich. City Mills	30,000
Monticello, Ind., (mill)	40,000
Boston, Mass., (warehouse)	150,000
N. Y. City, (storage warehouse)	55,000
Total	\$1,060,000

This record shows that over a million dollars worth of this kind of property has gone up in smoke in a single month. Is there no way that parties interested can and will stop these dreadful losses?

THE GEO. T. SMITH MIDDINGS PURIFIER Co. has failed. A great business has been wrecked. The announcement causes no surprise to the manufacturing element of the milling trade. Why?

Because it was expected on account of evident mismanagement in many respects, and the only wonder expressed was that the crash had not come before.

When this Company was at the zenith of its prosperity it was simply building an excellent middlings purifier which was sold by nearly every mill-builder and mill-furnisher in the country. The success gained by the purifier prompted the addition to the Company's manufactures of several other machines and ultimately it went headlong into the mill-building business, which as a matter of course incurred the opposition instead of the friendship and patronage of nearly every mill-builder in the country. To down the opposition thus raised, with a "rule or ruin policy," a mad rush was made to secure mill-building contracts, and if half the reports are true, at ruinous prices. Advertising was resorted to—good, bad and indifferent, through newspapers, traveling agents and other means less legitimate.

If the evident policy of the Company under its late management had been backed by a capital of ten or more millions it might have carried the day for a time, at the expense of every mill-builder and mill-furnisher, and ultimately of every miller in the country. With such backing it would have had the grip on every loaf of bread manufactured.

Whatever the future of the Company may be, we feel certain that its policy will be greatly altered to the advantage of itself and the trade generally.

An Indiana mill-builder recently said to us in substance, that this failure would be beneficial to the general trade. Mill-builders that have so far forgotten their own interests in the past as to bid for jobs at cost, will see that it is injurious in the end not only to themselves and their competitors but to millers, and the intelligent miller will see the point.

At the present writing the affairs of the Company appear to be involved in a legal tangle the end of which we are unable even to guess at.

BIG 4.

AS we go to press we receive the announcement that in the suit of The Consolidated Roller Mill Co. vs. The Barnard & Leas Mfg. Co. of Moline, Ill., in the United States Circuit Court at Chicago, Judge Blodgett has decided that the defendants do not infringe the Gray, Birkholz & Odell patents. The theory which appears to run through the opinion of Judge Blodgett, if ultimately sustained by the United States Supreme Court, will completely overturn innumerable patents on special devices, and will prove anything but agreeable to ALL manufacturers of roller mills.

Other cases of a similar nature are pending before other United States Circuit Courts, and when all are decided the matter will be taken to the United States Supreme Court for final adjudication.

THE UNITED STATES MILLER has the pleasure of being the first to present the opinion in full for the benefit of its readers.

IT must be so, for the editor says so himself. Here is the extract taken from the February number of the American Miller:

"The fact that its readers write to a paper, sending it items of news, opinions on current events or discussions, and words of commendation and appreciation, is the best evidence obtainable that it is read by the class to whom it goes. No journal in the country shows so much of this evidence as the American Miller."

WANTED.

PERSONS who desire to see their names in PRINT, can be gratified by writing us a short note, stating that they are constant readers of our publication and could not nor would they, try to conduct their business without it. It is not necessary to be a miller or blood relation of a miller or that the POSTMASTER of your town should know you. By furnishing us such intensely interesting matter for our readers, you will save us the necessity of manufacturing items of this nature and relieve us of considerable labor, which we of all things abhor. Address communications to THE AMERICAN BOMBAST, Windy X Roads.

MILWAUKEE REVIEW.

THE output of the Milwaukee mills was somewhat under the average the last 30 days, owing to the irregular running of a number of mills. The Phoenix mill has been shut down about ten days, to enable them to overhaul and strengthen their engine and generally clean and overhaul their machinery. The Jupiter has made some changes in their rolls, and has work ahead for only about a week. The Eagle has run at about one third capacity and are booked to shut down on the 17th inst. The Daisy will undoubtedly do likewise, rather than run at disadvantage.

Manegold of the Reliance finds it about as profitable and much more enjoyable to visit New Orleans, see the Mardi Gras and hear the sweet warblers. The Gem is kept bright by constant use, and the Duluth Roller Mill has 40,000 sacks sold ahead.

Generally in past years, the 15th of January was regarded as the time when stocks were the lowest and millers, bakers and dealers had matured plans for the new year. Having taken a review of the past and calculated the chances for the future, they were by that time becoming restless at the necessary yearly closing of business, and were then ready to turn the world upside down, or to know why it couldn't be done. This seems to be an exceptional year.

January has come and gone and half of February, and still we hear the complaint, "no business." What is the cause of such a state of affairs; who will tell us, and where shall we look for a remedy? We have seen the effect, let us look for the cause.

First, let me recall what I said last month about the disastrous effect of consigning flour to the markets of the old world. Our latest advices are that even the receivers of such goods complain that "many consignments of winter varieties are being forced on the market to the utter demoralization of prices of all flours." My prediction will undoubtedly be verified in the experiences of those millers.

Next to that comes the immense potato crop of Europe which furnishes an excellent substitute among the poor for dark bread. Potatoes are said to be so abundant that they sell on the streets of Dublin at 20c per bushel. Our own great and cheap corn crop, no doubt cuts something of a figure, but the mild winter and the promise of an early spring with its supply of fresh vegetables and the prevalence of "la grippe" must answer for the greater part of the present unprecedented dullness of the flour market.

Another factor—by no means to be disregarded—are the persistent efforts of the Chicago Bears to pound down the market.

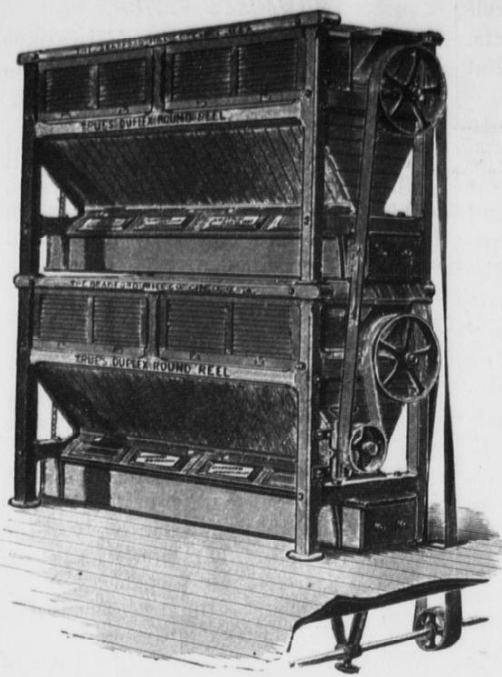
They have talked 70c. for May wheat until the world has come to believe in the soundness of their reasoning, notwithstanding the statistical position would seem to put this conclusion to flight. They have got the money and the power to put it there if they choose, and buyers are holding off with the expectation of buying at that figure.

Now that the grippe has subsided and people are finding their appetite again we shall expect that the reserves will be drawn upon in the great centres, and inasmuch as the visible supply is diminishing and the reserves in first hands are said to be small, these gentlemen may wait too long, and find some morning that the price has gone up to 85c.

Russia which has been our lively competitor for some years, now officially acknowledges a shortage of 112 million bushels wheat, and 152 million bushel rye. These conditions have been known for a long time but they were said to be "bull" arguments and more wheat was sold short on them; the government which could hardly be a party to such bull movement declares it true, and still, they sell it down.

Well let it go, the sooner it gets down the sooner it will rally and there will not be good demand or good business until wheat reaches 85c. to 90c. When that comes our mills will not have capacity to supply the demand.

DON'T.



THE BRADFORD MILL CO.

* CINCINNATI, O. *

Mill Builders and Mill Furnishers.

Dunlap Bolt.

True's Duplex Elevating Scalpers.

True's Duplex Elevating Flour Dressers.

Deobold's Scourer and Polisher.

Contractors for Complete Roller Mills on the Short, Medium or Long System

ROLLS RE-GROUND AND RE-CORRUGATED.

✍ WRITE FOR CATALOGUE AND ESTIMATES. ✍

SEC'Y REYNOLDS' ADDRESS TO MICHIGAN MILLERS.

IT WILL INTEREST ALL MILLERS.

MICHIGAN has over 700 flouring, feed and grist mills, large and small. Of this number there are not less than 130 roller flouring mills of a daily capacity of 75 barrels and upward, representing a total capacity of over 20,000 barrels daily and having an investment in plant and working capital at a very low estimate of not less than \$3,250,000. No single one of these mills at least, can afford to lose the benefits which the Association can give for a paltry ten dollars, or ten times that sum.

In these days of exhausting competition, when profits disappear and the question is not how much do you make, but how little do you lose, it behooves every man to take advantage of every possible chance that is legitimately offered to fortify his position and secure, if possible, as good as or better footing than his competitor. That the members of this or any other Association, however small, and no matter what the business, have advantages which their neighbors who stay out do not, is no longer questioned. Nobody appreciates this fact more than the men who have interested themselves in association work for years, and nobody more fully understands the greater advantages which might be attained by a larger organization and more united effort than they. Hence the persistence with which, year after year, they strive for increased membership and closer union of interests.

Imagine an organization in a single State, representing 20,000 barrels daily capacity with \$3,250,000 behind it. The millers of Michigan can have just this with an expense so trifling to the individual, compared to the advantages which could be derived, that ten times the cost would not induce one of us to abandon the enterprise. The enactment of the Inter-State Commerce Law has virtually forced the consolidation of transportation companies, and while it has benefited the shipper and producer in some instances it has proven a boon to the companies by bringing them together and making the interest of one the interest of all. The various passenger and freight associations which have grown out of the enforced union of interests are of such formidable proportions, and so rigidly maintained that the individual shipper is powerless to make an impression upon them. Nothing but a combination of manufacturers and shippers, working in harmony can hope to cope with them. Other industries with not half the interests at stake that we have, are moving in these matters with very satisfactory results.

The question of State grain inspection is being agitated in almost every grain-producing state. Missouri last year followed in the wake of Illinois and Minnesota, the two Dakotas will soon be in line,

and it is only a question of time when Michigan will have to give the matter serious attention. The reform has never come without a fight and the people who control the grain trade of Michigan and juggle grades to suit the interests of their largest patrons, the shameless grain-mixers, will not yield the rich revenue they now derive from the inspection of grain, by an inspector of their own creation, governed by rules of their own making and practically answerable to nobody, without a desperate struggle. The farmers first and the millers next are interested in this reform, and by a union of their interests only can it be brought about. If the millers had been in earnest about this matter, the bill before the last legislature might have become a law. Let us see that we are prepared to win next year.

The listing and reporting to members of the transactions of tricky and unreliable dealers in the flour trade was made a special feature of the Secretary's work for the coming year. The information gained from this source alone may be worth to any miller in a single transaction all he pays to the Association in ten years.

A word to the smaller mills: An impression prevails that the big mills get the most of the benefits of the organization at the expense of the small ones. Nothing could be further from the truth. The big mills have their men on the road to watch their trade and guard their interests. They have larger capital and better facilities in every way for taking care of themselves than the small mills. If it was good business to 'go it alone,' they of all parties interested could best afford to stay on the outside. If this war of competition is 'fought to a finish,' so the result amounts to a 'survival of the fittest,' the larger mills will die last. The fact is our interests are mutual, but if there is a preponderance of benefit accruing to the large or small mills, it is in favor of the latter.

To remove the last shadow of cause for complaint, that the association is anything but what its name implies, a State-wide organization not run in the interests of a class or section, our old officers who have served us so long, so unselfishly, and so well, by their own request, retired and gave way to an entire new set of men, from widely separated localities and representing every phase of the milling industry, from the 100-barrel mill, doing an almost exclusive local trade, to some of the largest in the State, whose sales extend to every prominent domestic market and many foreign ones. It is hoped that if any unjust suspicions have been entertained in the past this action will remove them, and that you will resolve to give your aid and influence to the Association, thus making it one of the best and strongest in the United States.

Your Secretary, while personally entertaining much more radical views on the subject of millers' organizations than the Association at its annual meeting was prepared to endorse, will nevertheless do

all in his power, with the limited means at his disposal, to make the coming year the beginning of a new era in the history of this Association. A little later, after knowing just how much support we can command, I will make an effort with your aid and co-operation to find out something about the amount of flour actually shipped from this State in a given time, what markets are affected by it, and particularly what transportation lines carry it for us, with the view of taking advantage of any points which the information may reveal for the exclusive use and benefit of members of this Association. In the meantime please bear in mind that I am your servant, not your master, and that your advice and hearty co-operation are as necessary as your money in making this Association a great and permanent success.

M. A. REYNOLDS,
Secretary and Treasurer.

CULPABLE NEGLIGENCE.

IT is a remarkable fact that, notwithstanding the almost daily accidents arising from steam boilers and machinery generally, there is a culpable negligence, on the part of both employers and their employees, to use cautionary means for the prevention of such disasters. Steam boilers of every description are to be found hissing in cellars, under lofty buildings, under our side-walks, and are placed at every height and at every depth. Machinery is to be found in every nook and corner of our factories and workshops, from the massive shaft and gearing to the light and complicated movement of a sewing or knitting machine. And yet a general inspection of the "order of things" impresses the mind of a careful observer that there is need of a reform in system, in arrangement and precautionary measures. We see boilers placed in dark and obscure corners without glass water-gauges, and where the engineer knows the height of the water in the boiler only by the sound of the gauge-cock. To examine the safety-valve would require a lamp, and therefore it is seldom looked at, but supposed to be properly "weighted" and all right. We furthermore daily hear of safety-valves "sticking," gauge-cocks getting "choked," safety-plugs being melted out, and the accumulation of "scale." Again we read of some unfortunate person having been "caught in the machinery" and after having suffered agony for hours passing out of existence. The calendar of accidents is too well known to require any reference to its horrors; but it may be said—nay, it is the customary expression—that "these things result from carelessness." That is just what is the matter. Carelessness added to incompetency, ignorance, and neglect. Owners of machinery pay high prices for their "power," but when once got in running order they seldom employ a thorough and competent engineer, but get some raw hand who thinks he can "fire and run an engine." "Neither our profits nor our

business," they say, "will allow us to pay high wages for running our machinery;" but after a few accidents, for which they have to pay handsomely, they learn the economy of employing reliable and competent help on their steam machinery. Safety is far before personal gain. Is it not incumbent upon every proprietor and every owner of machinery to not only exercise careful discrimination in the selection of those who are to have the lives of hundreds in charge, but also to periodically make constant inquiry about, and have withal a constant supervision of the state of the machinery on his premises? Plenty of light should be admitted wherever there is any machinery; it will be better attended to and more easily repaired. If a jar, or thump, or noise, or any indication of something wrong occur, it should be repaired and attended to at the very first opportunity, even if it should require nightwork. Thorough cleanliness, rigid economy in material, constant watchfulness, frequent examination, and a weekly report of all and everything connected with the running of machinery should be insisted upon. It should be seen that the engineer takes a pride in everything looking and working in the best condition, or if such pride cannot be instilled into him, he should be considered as unworthy of confidence and a dangerous man to have around.

We need not speak of the advantages which would result from the course here prescribed. In the few instances where investigation, thorough and complete, takes place, and where machinery receives the attention it always demands, there will invariably be found an amount of satisfaction and pride on the part of both employer and employees. There is much need of such mechanical reform. The state of machinery in many of our manufactories is disgraceful, not to say dangerous; whereas, on the other hand, those capitalists, who enforce a rigid system of cleanliness, neatness, and order—those who take an interest in the appearance of their costly machinery and in the safety and comfort of their "help"—deservedly receive the respect and admiration which good example invariably begets, even if it is not always followed.—*American Engineer.*

CATARRH, CATARRHAL DEAFNESS—HAY FEVER. A New Home Treatment.

Sufferers are not generally aware that these diseases are contagious, or that they are due to the presence of living parasites in the lining membrane of the nose and eustachian tubes. Microscopic research, however, has proved this to be a fact, and the result of this discovery is that a simple remedy has been formulated whereby catarrh, catarrhal deafness and hay fever are permanently cured in from one to three simple applications made at home by the patient once in two weeks.

N. B.—This treatment is not a snuff or an ointment; both have been discarded by reputable physicians as injurious. A pamphlet explaining this new treatment is sent free on receipt of stamp to pay postage, by A. H. Dixon & Son, 337 and 339 West King street, Toronto, Canada.—*Christian Advocate.*

Sufferers from Catarrhal troubles should carefully read the above.

(From our own Correspondent.)
OUR ENGLISH LETTER.

LONDON, Feb. 1, 1890.

FROM various parts of the country I hear that the condition of the growing crops is very satisfactory and from what can be seen the very mild weather of the past month, which has been the mildest January on record for 25 years, has not yet given the young wheat the appearance of a too rapid growth. The price of wheat does not afford much inducement to sow a large quantity; but when farmers have land in proper course for wheat and manured for it, they do not care to sow any other cereal in its place. The average price of wheat for the year 1889 was only 29s. 10d. which is 1s. 2d. less than the average of 1886, the lowest on record, although the wheat production of the world for the past season was considerably less than a year's consumption and the stocks of old wheat have been obliged to contribute the share wanting. Millers throughout the country are making complaints of the condition of wheat samples which are much affected by the clinging dampness that has been the general characteristic of the past month. The extraordinary growth of grass during the last two months has furnished the farmers with a good deal of feed that was scarcely wanted, and live stock have been sent out into the pastures to graze, where in ordinary seasons they would have been kept in the yards or stalls. Thus the great stores for winter feed have been economized and feeders of cattle and sheep are better assured than ever of having abundance of food for their animals until the forage crops of the coming season are ready for use. This has a tendency to make millers' offals and feeding cake a drug on the market, and with the falling off in the consumption of flour on account of the weather and the influenza it is not to be wondered that millers this week lowered the price of flour, sixpence a sack. The agricultural imports last year into the United Kingdom, as a whole, were on a much more extensive scale and cost more money than in the three and four years preceding. The quantity of wheat and flour together has been exceeded in five previous years, while the value was very much greater in several years of higher prices though smaller imports. Barley reached the top figures in quantity and value alike in 1888 and oats in quantity but by no means in value. The quantity of maize has only twice been greater than it was last year, while the cost has been nearly 50 per cent. higher on more than one occasion. It will be noticed, however, in the following table that there has been a considerable advance in most of the items since 1887:

THREE YEARS' AGRICULTURAL IMPORTS.			
	1887.	1888.	1889.
Wheat.....Qrs.	12,873,389	13,206,523	13,523,601
Flour as Wheat.....	5,158,983	4,832,221	4,199,773
Total as Wheat.....	18,032,372	18,038,744	17,723,374
Barley.....	3,997,610	5,957,700	4,876,462
Oats.....	5,261,357	6,813,613	5,817,840
Peas.....	664,510	538,000	376,225
Beans.....	578,036	702,967	836,610
Maize.....	7,362,127	5,912,328	8,447,381

It is estimated that the net imports of agricultural commodities similar to those produced in the United Kingdom cost nearly 9½ millions sterling more than in 1888 and about 17½ millions more than in 1887. The total value of these commodities in 1889 were £131,075,604.

At a meeting of the Council of the National Association of British and Irish Millers held on the 13th of last month in Mark Lane, London, the chairman, Mr. R. H. Appleton, read a letter which he had received from the secretary of the association, Mr. J. H. Chatterton. It read as follows:

61 MARK LANE, LONDON, E. C.
R. H. Appleton, Esq., President National Association of British and Irish Millers, Stockton-on-Tees:

December 2d, 1889.
DEAR SIR:—After the disapproval expressed by some of the members at the last council meeting as to the manner in which I have conducted the affairs of the

National, I think the most dignified course I can pursue is to place my resignation in your hands, to deal with as you think most desirable at the next council meeting. I shall be very pleased to fall in with any arrangements that the council may make for my handing over the books and papers of the association, and will give every assistance in my power to initiate my successor into the duties of the office. Having held this position for twelve years, I cannot but feel many regrets in thus giving up a post to the interests of which my best endeavors have always been devoted. I have, however, the satisfaction of knowing that I shall still be able to continue business relations with the numerous friends that I have made in the milling trade, and hope that I may do so for many years to come.

I am, dear sir, yours very truly,

J. H. CHATTERTON, Secretary.

After the ordinary business of the council a private meeting was held with the result that the following communication was delivered to Mr. J. H. Chatterton:

JANUARY 13th, 1890.

The council regrets that circumstances have led to Mr. Chatterton, resigning his position as secretary, and in accepting the same, recognizes the many services he has rendered the Association during the twelve years of his office.

(Signed), R. H. Appleton, President National Association of British and Irish Millers.

The new Secretary has not yet been appointed, nor has any one yet been fixed upon but before may next letter, I have no doubt the appointment will have been made.

During the year 1889, Mr. Henry Simon the well-known milling engineer of Manchester handled 53 plants; this is the total number he started or had in course of erection on the 31st, December last.

The total number of complete plants started in course of erection or ordered in the colonies or abroad was 18 making a grand total of 71 complete roller mill orders. The total number of complete plants on this system is over 300 of which 20 are in Australia, 11 in New Zealand, 9 in India, South Africa, Brazil, Portugal and Japan, and the remainder in the United Kingdom.

Mr. J. J. Armfield & Co., who some months since were the plaintiffs in an action against a firm of London millers as mentioned in the UNITED STATES MILLER have taken the premises on the ground floor of No. 20 Mark Lane as show rooms for their milling machinery, and to-day make quite a display which attracts general attention from the passers by.

The long expected law suit of Apsimon versus Simon or as it is more correctly put in the law list Van Gelder, Apsimon & Co., versus The Sowerby Bridge United District Flour Society Limited, was commenced on the 16th day of last month in the Chancery Division of the high court of justice. The action was brought by the assignees of a patent granted to Mr. Peter Van Gelder on the 21st of June, 1878, for an improvement in apparatus for separating substances by means of sieves and in the mode of operating parts of the same; and the plaintiffs relied on the amended specification on which the latter patents were granted. In his opening speech, the plaintiffs counsel claimed a method of operating, which applied to this particular machine, was new, their points being—1st, superimposed sieves; 2nd, circular motion to the sieves on horizontal planes to every part of the machine; 3rd, the sieves inclined for the purpose of causing the material operated upon to pass over the surface, and to be then properly delivered; 4th, provision at the upper ends for sieving and distribution; 5th, an arrangement for the continual flow of the grain properly sifted and collected; 6th, the arrangement so that the grain falls continuously over the sieves and is duly separated and carried to its receptacles—there having been anterior to this machine no super-imposed sieves actuated by vertical crank shafts and the cranks being

arranged at the requisite angles to cause the motion given to be balanced. After the opening speech, the attorney-general for the defendants took a preliminary objection to the status of the plaintiffs. The patent had been assigned to other persons—the Halifax Banking Company and besides them several other mortgagees. This was admitted by the plaintiffs' counsel who put in a certificate of the entries in the register, showing that, besides the bank, Joseph Walter Suttow, Henry Stokes, Noel Algernon Humphreys and Jas. Dale were registered also as mortgagees, and argued that, as mortgagees in possession, the plaintiffs had an interest to defend—an interest which would certainly entitle them to an injunction. Mr. Justice Kikewish said he thought the plaintiffs could not pretend to be proprietors of the patent after the assignment of it to the Halifax Banking Company. As to the plaintiffs being entitled to sue for the protection of their rights, the mortgagees had full power, in the deed to grant a license or to sell, subject to certain regulations. The mortgagees, therefore were not persons who could act by themselves; whether they could sue for an injunction, he was not called upon to determine, but it was impossible for them to sustain their action in its present form. The plaintiffs' counsel (Mr. Ashton,) thereupon applied to amend the proceedings by adding the names of the plaintiffs, whose consent in writing they hoped to obtain. After some further arguments Mr. Justice Kikewish said that if the application was not made for leave to amend, or being made, it were refused, there would be judgment for the defendants, with costs on the higher scale. In the court was one of the finest display of technical talent in the shape of witnesses that has ever been assembled in London to take part in a flour milling patent case and the legal flaw was therefore to a certain extent a disappointment to every one. However, the case is not yet settled so that most likely the latent talent will still be called into play before very long.

A general meeting of the proprietors of the London and St. Catharine Docks Company was held January 30, when the chairman said, had it not been for the disorganization of trade caused by the strike, the dock statistics for the past year as compared with 1888 would have shown an increase, as it was 4,459,046 tons of shipping from foreign parts entered all the docks of London, this being a decrease of 35,039 tons. The tonnage loading ships entering the dock under the management of the joint committee had been 2,838,981, a decrease of 56,551 tons. In respect however, to goods, there was an increase of 1,513 tons in imports and 8,349 tons in the exports which passed over the quays. The stocks in their warehouse on the 31st of December were 286,337 tons, as compared with 302,625 tons in 1888. The diversion of the shipping from the docks of London to other ports, consequent upon the strike, would account for the decrease of 53,745 tons of shipping from foreign parts into all the docks of London, the loss to the joint-committee arising from the extra expenditure in labor caused by the strike was £4,000 and this did not include the loss owing to the diversion of trade from the docks. If the experience of the past three months was to be a guide for the future £150,000 per annum would not cover the enhanced expenditure on labor. This was a very serious outlook for the trade of the port.

From reports to hand to-day it appears that the crop prospects in Europe generally are favorable at present. In France the mild weather has brought some of the wheats too forward but they are looking well. In Austria-Hungary, Germany and Holland the mild weather is said to have improved the appearance of the Autumn-sown crops. In Russia the winter wheats have planted well, and no injury appears to have been done by frost up to

the present time. The most important news for the English millers is that from Russia; it is to the effect that the stocks of wheat at Odessa are much larger than they were supposed to be, the semi-official stock-taking according to Beerholm having made the quantity 1,400,000 qrs. at the close of the past year or fully half a million more than recent estimates.

L. MAYGROVE.

A REMARKABLE WATER-POWER.

One of the most remarkable instances of electric transmission of power, writes Alvan D. Brock in the *Overland Monthly*, has only recently been accomplished in the State of Nevada, on the world-famous Comstock Lode and the almost equally famous Sutro tunnel. At the Nevada mill there is a ten-foot Pelton water-wheel, which receives water through a pipe-line delivering water from the side of Mount Davidson under a head of 460 feet, giving 200 horse-power. Here the water is again caught up, delivered into two heavy iron pipes and conducted down the vertical shaft and incline of the Cholar Mine to the Sutro tunnel level, where it is again delivered to six Pelton water-wheels, this time running under a head of 1680 feet. Each of the six wheels is but forty inches in diameter, weighing 225 pounds, but with a jet of water less than five-eighths of an inch in diameter they develop 125 horse-power each. On the same shaft, which revolves 900 times a minute, are coupled six Brush dynamos, which generate the current for the electric motors that drive the stamps in the mill above ground. The result is that, where it formerly took 312 miners' inches of water to operate thirty-five stamps, but 72 inches are now required to run sixty stamps. This is the most enormous head of water ever used by any wheel, and by itself constitutes an era in hydraulic engineering. A solid bar of iron thrown forcibly against this tremendous jet rebounds as though it had struck against a solid body instead of a mobile fluid. The speed of this jet, where it impinges against the buckets of the wheel, is two miles a minute—176 feet a second.

THE PROCESS OF COMBUSTION.

The Safety Valve gives the following description of the process of combustion in the ordinary lighting of a coal fire: "The phosphorus on the match inflames at the low temperature of 150 degrees Fahrenheit, and mere friction ignites it. In burning it combines with the oxygen of the air and gives out heat enough to raise the sulphur on the match to the ignition point of 500 degrees. This combines with more oxygen and gives out sufficient heat to raise the temperature of the wood in the match to 800 degrees, at which point it combines with enough oxygen to give out a temperature of 1,000 degrees, which raises the coal to a temperature required for ignition, and the latter takes no more oxygen, rising to the temperature of 3,000 degrees or more, according to circumstances. The ignition of the coal is the last in a series of progressive steps, each increasing in temperature, but the oxygen supplied at each stage of the process is of the same initial temperature, and no boiler furnace has ever been built in which hot air was proved to increase the intensity of the combustion. The idea of hot air in this case has always been traced to the seemingly similar application in the hot blast furnace. There, however, the case is totally different. The iron lies among the coal, and the entering cold air, before it has combined with the carbon, chills the iron, thus rendering more coal necessary than if the iron had been heated. If the air could combine with the coal before it reaches the iron the temperature of the air would be a matter of indifference." The preceding is sound philosophy, and a study of the principle as here stated may remove some of the erroneous notions widely entertained by men who discuss the smoke nuisance.

[Written for the UNITED STATES MILLER and MILLING ENGINEER.]

MILLING THOUGHTS.

BY J. F. MUELLER.

IV.

IN milling, as in every other profession, while men doubtless differ as to their original qualifications and aptitudes, yet the differences are not so great as they are supposed to be, and they are by no means so great as those produced by study and practice. The man who has no special gift for this employment, but who faithfully and intelligently tries to perfect himself in it, is sure to be a better miller than the one who has the natural gift but adds to it no special study and preparation.

I have no desire to discourage those faithful men who are so nobly striving to do good work as millers. But I cannot help expressing the regret that so much of this labor is without adequate result. Why should persons act so differently in this matter from what they do in any other? If a young man wants to become a machinist, he puts himself under the influence of a man who is proficient in the business, sees how it is done, and learns to work with the lathe, vice, boring mill, etc., tries and experiments, and studies the matter, until he gradually becomes familiar with the work. So of any other ordinary business, yet when it comes to milling, anything like a definite study or observation of the mode of doing it, is almost unknown. It is really no exaggeration to say that many millers bungle in their work as egregiously as would a farmer who were to dig a pit and bury therein a bushel of corn, and imagine that he was planting; his labor would not be wider of the mark than much that is bestowed in mills.

In our mills are many professional millers of approved skill. Why should not a miller, who is conscious, of not succeeding as he would desire, spend an hour occasionally in observations or find out the name of some miller who is particularly successful and have an occasional conference with him?

There is nothing equal to exchanging ideas with good practical millers. It will set you to thinking and quicken your power of observation. It will help you to learn from your own experience.

Every miller has at times a desire to become conversant with certain facts concerning his mill, and often is anxious to know about something, while a fear of being considered lamentably ignorant, causes a careful avoidance of the subject about which ignorance exists, whenever a conversation might seem about to lead to it. But one of the greatest bars to progress is the fear of being considered ignorant. It is the very unrighteousness of ignorance.

Make a note of the difficulties you encounter, and the points in which you cannot accomplish what you desire. Lay your difficulties before some friend who is a successful miller and get advice, or bring up the matter in an indirect way and thereby get his opinion without necessarily exposing your weakness on the subject. Anything rather than going on, week after week, without improvement. There is a way of overcoming difficulty. Only make up your mind that you will find out what that way is. If you think it cannot be done, of course it will not be done. If you have fairly made up your mind that it may be done, and that you can do it, it is half done already. One reason why so many millers desert the ranks, is the irksomeness produced by want of success. Few things are more intolerable than being obliged to do a thing while conscious of doing it in an awkward and bungling manner. On the other hand, almost any work is a pleasure which one is conscious of doing well.

It behooves millers, who expect to keep a pace with modern milling to acquaint themselves diligently with the most approved methods. No miller will be re-

tained who does not keep himself well posted in the progress of his profession, and who is not found continually aiming at self-improvement.

Improvement comes by comparison. The man or the institution, that fails to profit by the experience of others is not wise. It is the duty of every miller to be habitually conversant with the milling journals of the day, and to loose no opportunity for personal observation of the methods of others. I have often noticed, with equal pain and commiseration, that many of the dusty crew, after once having finished their preliminary studies and obtained a situation, make no further effort at improvement, but settle down for life in an inglorious mediocrity. We aim to have millers thoroughly posted in regard to the theory and the methods of milling, prepared to ride upon the advance wave of every real improvement in the art.

We never expect, however to accomplish our ends mainly by fine spun theories. I have no faith in any theory of milling which does not include, as one of its leading elements, *hard work*. We have no royal road to learning. Any knowledge, the acquisition of which costs nothing, is usually worth nothing. Milling should be a co-operative act. The mind of the head miller and his seconds as well as the apprentice if possible must act together in intellectual co-operative sympathy.

We aim in these days to accomplish results, not by fanciful theories, but by *bona fide* hard work—not by exhausting drudgery, nor by fitful, irregular, spasmodic exertions, but by steady, persevering, animated, straight-forward work. The true secret of thrift is to plough deep, not to skim over a large surface—to learn to study things by actually noticing them with our own senses, and then learning to apply our knowledge so acquired. This habit of observation should be applied in all branches of the profession, so that in every stage of progress we shall know not only the theory, but be practically conversant with the thing itself.

In other words, we would cultivate real, as well as verbal knowledge, and aim to awaken in ourselves an active, inquiring observant state of mind.

FLOUR MILLS AND THEIR HAZARDS.

BY P. A. MONTGOMERY.

Before Applying for Insurance, Millers should Study this Article Well.

FIRST, is the foundation of building solid? Is all the millwright work strong and substantial? Is the shafting sufficiently large for the work it has to perform? Is it well hung and arranged? Is it running smooth and in line? Are the bearings all metal; are they well set and running cool; are they provided with drip cups? If there are any wooden bearings, how many revolutions does the shaft make per minute? Are all pillar blocks solid and substantial? Is any part of the shafting overloaded, any bad couplings or pulleys out of balance? To be able to discover defects in these things is what an inspector, should try to learn, for it is all important that he, the inspector, should be able to truthfully and understandingly answer the question in proper manner.

Blow rooms should be placed outside and machines should discharge into them, through metal spouts, or if they must be inside, they should be made fire-proof and ventilated to the outside, and all blow-pipe should be metal, as above stated. Smut dust is a dangerous agent when it becomes wet or damp. Again, there is a hazard in these blow rooms. Some hard, foreign substance passes through a cleaning machine; it strikes fire, and the spark is blown through discharge spouts into the blow-room and fire follows. We find usually, in flour mills, grain separators, grain scourers or brush machines, smut-

ters and screens—some of these machines are horizontal and some are vertical.

First—How are these machines driven? Are they driven from top or bottom? If from the top, is their a bearing above the pulley, or is the pulley on the end of a shaft? It is important to know this, for it is dangerous to operate any machine in the latter way, as the strain is all on a wind and causes friction which may result in hot bearing and a fire. Next—Are there any concealed bearings, and, if so, how are they cared for? Are they kept clean and well oiled? Most of the new cleaning machinery is now set up with *outside* bearings, and a good deal of the old machines changed over to the same. Examine carefully, in all vertical machines, to see if the step in which the toe of the shaft sets is cool. Elevator boots next claim our attention. Here we ask: Are they easily accessible for cleaning? Are the slides loose so they can be easily pulled out, and the bottom of the boot cleaned? Are the boots cleaned regularly? Are any accumulations allowed to remain and become hardened, and likely to cause friction by the belts or elevator buckets or cups rubbing against them? Know that these places are cleaned regularly and well. Conveyors—See that the conveyors are running free; see whether or not there is a loose lid that will shove off, in case conveyor begin to choke up. This should be insisted on if such conveyor boxes are closed, and practical mill men nearly always have them so arranged.

We now pass to the first floor. This is most always the grinding floor, and we find here the hopper scales, flour packers, some flour bins, and the grinding machines, consisting of buhrs or rolls, or both, as the case may be. On this floor there is most generally good care and a number of operators, so that what hazard there is, is most always neutralized by watchfulness. We inquire, however, to see what ventilation there is for rolls and buhrs. Is there any patent exhaust to take dust and hot air from such rolls or buhrs? This is most commonly done by a fan sucking hot air and dust, to a dust room, or by dust collecting on some one of the upper floors. This is considered an important point, and should be insisted on, as it keeps the flour free from dust, and materially decreases the hazard.

We now pass on to the second and third floors, where new classes of machinery are found, viz.: bolting machinery called bolting chests. It is important to know that these chests are well and safely arranged. Are these conveyors running free? Are they so arranged that they will at once indicate choking or clogging? That we have fires from choking in tight conveyor boxes in bolting chests in flour mills cannot be disputed.

Purifier and aspirators next claim our attention. Here let me say that the aspirator has about disappeared from modern mills. Are the purifiers well arranged? Are they running well and steady? Are they speeded up too high? Is there plenty of space around them so they can be readily oiled and cared for? Are they dusting into dust rooms, or have they individual dust catchers, or dust catchers grouped for them on any particular floor, or do they dust into the mill? The dust room is bad, but dusting into the mill should under the circumstances, be allowed. By far the most satisfactory method of getting rid of dust is the use of a good dust collector well arranged in mill. Bran dusters are machines to be looked after. Are they vertical or horizontal machines? Are they in order and running well? Examine them closely. Dust houses have been spoken of somewhat in dealing with the question of cleaning machinery and purifiers. Some dust houses, as before mentioned, are made of canvas—some are frame, and both are bad; the only good thing to be said of them is that they confine the dust to one part of the mill.

I repeat, the only proper method for getting rid of dust from rolls, buhrs and purifiers, is the dust collector. I should prefer the outside blow-room for grain-cleaning machines, and would require metal blow-pipes to such blow-rooms. No machine should be allowed to dust on the roof of the mill. On these upper floors again is found the conveyor. Look into this and see how they are arranged. Upper line and counter shafting should be looked after in the same manner, and with the same caution, as in all other places. Elevator heads next claim our attention, and here more care is required than in the examination of elevator boots. Elevator heads in the modern mill, are constructed in three ways. The old method was and is, a square, strut-board under the upper pulley, and on this *square board* the dust and debris collects, and in case of sweating grain or dampness from any other cause, this debris becomes hardened into a punk-like substance, and friction from *belts or pulley sets* such substance on fire, and the mill is likely to be destroyed. Square strut-boards should not be allowed. The next style is to hopper them one way so that all dust and debris will drop down the back leg. The third and last, as well as best, is to hopper them both ways; the last leaves no possible place for dust to lodge. Here also we try to discover if there has been any settling or sagging, so that the shaft has worn down into the woodwork of the elevator head, and cause friction there; also from the settling of the pulley on to strut-board; also try to find out whether or not belts are running free and clear.

Is the machinery so located on the different floors of the mill that a free passage can be had around and through it, so that such machinery can be easily and readily cared for and oiled, kept clean, or is it crowded and huddled together so as to obstruct passage way and render oiling and cleaning difficult, and in some instances dangerous, or is some of it in dark, close attics, or low cramped-up basements? In this latter case I should decline to write lines on mill, for reasons that should be obvious to all insurance men.

Is machinery speeded up or worked beyond its capacity, or is it allowed to become old, and worn out and shaky? Are all fan bearings kept clean and well oiled? as they are liable to become gummed up with floor dust.

Is the mill kept strictly clean and neat? Are all old and worn-out or otherwise useless machines, taken out, or are they left in the mill as catch-alls for dust and other things that might cause trouble and obstruct a free passage?

Badly crowded, dirty and slovenly-kept mills—that are crowded up and allowed to become shaky—when order and care are at a discount, should not be written in any company.

So, to repeat somewhat, the essentials of a good flour mill are: First—absolute cleanliness and order in all things, even to the smallest particular. Second—Good room on all floors, with solid and substantial millwright work; with good brick boiler house detached, or cut off by good fire doors and brick stack. Third—Good machinery, well located and cared for. Fourth—An abundant supply of casks of salt water and metal fire pails on each floor of the mill. Fifth—Good practical miller to operate mill. Sixth—Watchman with good watch clock. Seventh—Know that mill is making money. Eighth—Have the mill so constructed that there is plenty of daylight in all parts of it, so that dust and dirt can be seen; no dark basements; no blind attics, hollow walls, or concealed spaces. With the above essentials, I see no reason why a flour mill should be considered one whit more hazardous than many specials that are written at about one-half the rate they are.

We shall be pleased to receive from any of our readers, short, crisp, sensible letters on subjects of interest to the flour and grain trade for publication.

E. HARRISON CAWKER, Publisher,
124 Grand Avenue, MILWAUKEE, WIS.

Aside from prints named above, there is a great mass of information of value.

Your book is what I have been looking for. Figuring is now made a pleasure instead of the tiresome routine it formerly was.—*B. M. Cole, with Henry W. King & Co., Chicago.* We give it our unqualified endorsement.—*Radmore Christian Observer.* One of the best things we have seen for a long time.—*F. J. Houder, Standard.* One of the best books we have seen.—*W. J. McChesney, Michigan.* I would not take anything for mine if I could not get another.—*F. J. Houder, Standard.* I have never been so pleased with the investment of \$1.25 as in this instance.—*A. P. Selzer, Menasha, O.* I assure you I am delighted. Had I known what a treat was awaiting me, I would have been impatient to get my mail.—*P. H. Stradler, Fort Atkinson, Wis.* Your book has at this early date proved of the greatest advantage and usefulness.—*M. McChaulough, with D. L. Rike & Co., Dayton, O.*

LEGAL OPINION.

Circuit Court of the United States for the Northern District of Illinois.

Consolidated Roller Mill Co.,

vs.

Barnard & Leas M'f'g Co.
Blodgett, J.

The bill in this case, as amended, charges the infringement by defendant of patent No. 222,895, granted December 28th, 1879, to William D. Gray, for "An Improvement in Roller Grinding Mills."

Patent No. 238,677, granted March 8, 1881, to the said Gray for a "Roller Mill for Grinding Grain."

Re-issued patent No. 10,130, granted June 20, 1882, to W. H. Odell, for a "Roller Mill," the original of said last named patent having been granted December 13th, 1881—and patent No. 269,623, granted December 26, 1882, to Hans Birkholz for a "Roller Grinding Mill."

While the bill charges infringement of each of these several patents in general terms, the complainant's proof limits the charge to the infringement of the fourth, fifth, and sixth claims of Gray's patent No. 222,895, second and third claims of Gray's patent No. 238,677; second claim of Odell's re-issued patent No. 10,130; first claim of Birkholz's patent No. 269,623.

All these patents are intended to be applied to machinery for the purpose of grinding grain by means of rollers in place of mill-stones, introduced into this country at a comparatively recent date.

It is conceded that the process of grinding grain by means of rollers as a substitute for the immemorial mill-stones originated in Europe, and that the device thereof had been brought to an approximately successful operation long before they were adopted in the United States, hence, all the patents in question here are, for what are claimed to be improvements on the roller mills of Europe as our manufacturers found them developed and in use there.

The Gray patent No. 222,895, granted December 1879, is said in the specifications to relate to roller grinding mills and to consist of a peculiar construction and arrangement of devices for arranging the rolls vertically, as well as horizontally, whereby any unevenness in the wear of the rolls, or their journals or parts may be compensated for and the grinding and crushing surface kept exactly in line.

The invention also consists in the device for separating the rolls when not in action, without disturbing their parallelism.

Only those portions of the device covered by this patent, which provide for the lateral adjustment of the surfaces of the rolls, so as to secure the parallelism of their surfaces, and which provide for the separating of the rolls from their working position without disturbing their parallelism, and the feature which regulates the working pressure of the rolls are in question here.

The proof shows that it was common in the European roller mills, before Gray's device was produced, to secure this element of adjustability by setting one of the rollers in fixed journals, while the other roller was set in a movable sliding or swinging frame, so as to be capable of such vertical and horizontal movement as to allow the requisite vertical and horizontal adjustments.

Finding the mechanism in this stage of development, that is, with one movable roller, and without considering for the present any of the devices older than Gray's for securing the desired parallelism of the surface of the rollers, Gray by this patent secured this adjustment of parallelism of surface by means of two rods G, extending horizontally from the ends of the fixed roller frame to the swinging frame which holds the movable roller and these rods being screw-threaded at some distance on each end, allowed the desired adjustment for parallelism to be made of manipulating nuts upon these ends so as to draw and hold the movable rolls into the right relation of the surface of the fixed roller and in order to allow the movable roll to yield or give way in case a hard substance like a wire, nail or gravel stone, should get between the grinding surfaces, spiral springs are interposed between the bearings of this roll upon these adjusting rods and the point where they are attached to the swinging frame. It had also been found in practical use before Gray entered the field that when the mill was stopped with some grain yet in the hopper, the grain would fall into the space between the rolls where it would rest, and act as a wedge or brake to greatly retard, if not prevent the starting of the mill again, and provision is therefore made for separating the rolls without disturbing their grinding adjustment for parallelism, by means of nuts upon the threaded ends of the rods G, where they are attached to the frame which holds the stationary rollers or by cams or eccentrics working upon the ends of these adjusting rods.

These features of the patent are covered by the fourth, fifth and sixth claims, which are:—

4. In combination with the movable roller bearing, the rod G, adjustable stop device to limit the inward movement of the bearing, an outside spring urging the bearing inward, and adjusting devices, substantially as shown, to regulate the tension of the spring.

5. In combination with the roller-bearing, the adjusting rod provided at one end with a stop to limit the inward movement, a spring, and means for adjusting the latter, and provided at the other end with a stop and holding devices, substantially as shown and described.

6. The combination of the bearing D, rod G, nut I, spring H, nut J, stop N and nut O. The feature of the Gray patent, No. 238,677, which is in controversy here, is the provision for working the eccentrics to which the ends of the rods G, of the first mentioned patent are attached, where those rods are fastened to the frame, which holds the stationary roll, by means of the rod or shaft which connects the eccentrics and enables the operator to work these, that both the rods G are equally extended by the motion of this rod, thereby throwing the rolls apart so that the grain

may drop through between them without wedging the rolls when the mill stops, and drawing them together again in their grinding position when the mill is put in motion, instead of requiring the operator to manipulate separately the nut or cam on the end of each rod G, for such purpose. These characteristics of this patent are covered by the second and third claims, which are:—

2. In combination with the swinging roll supports E, and the rods G, connected thereto, the eccentrics H, shafts I, and rod K.

3. In combination with the movable roll supports E, and the rods G, adjustably connected thereto, a transverse shaft I, provided with two eccentrics connected to the rods G, at opposite ends of one roll, whereby the roll may be thrown into and out of action instantly without changing the adjusting devices.

The feature of the re-issued Odell patent, No. 10,130, in controversy here, is a device for throwing the two sets of rolls in a double roller mill apart from their grinding position and bringing them together again by the movement of a single lever or bar.

This lever being so arranged as to work simultaneously with the rod or cams of the rod G, or their equivalents in the first Gray patent, and this feature of the patent is covered by the second claim, which is:—

"2. In a roller mill, the combination, with the adjustable rolls and journals, of transverse shafts H, a through shaft J, link mechanism connecting the said shafts, and a single hand lever K, connected with the through shaft, for simultaneously adjusting both sets of rolls by a single-lever movement, substantially as described."

The Birkholz patent, No. 269,623, so far as in question here, shows a frame, having a fixed or stationary roller, with a swinging frame or casing pivoted to the fixed frame carrying the other roller and a transverse rod like Gray's rod G, whereby the distance of the roller and swinging frame or movable roller, from the fixed roller, can be adjusted by means of nuts working on this rod, and a spring at one end of the rod to relieve the rolls in case any unusually hard substance comes between them.

This feature is covered by the first claim of the patent, which is:—

"1. The combination, substantially as before set forth, of the fixed roller-supporting standard, the movable roller carrying casing pivoted thereto, the adjustable gage rod, the nut thereof, held by the standard and the spring connected with said rod, and adjustable in tension independently thereof."

The defenses insisted upon are:—

1. Want of patentable novelty in the claims of which infringement is charged.

2. The defendant does not infringe.

I have already said that when Gray entered the art he found already there methods of adjusting the rolls so as to bring their axis into the same horizontal plane and methods of adjusting the parallelism of the surface of the rolls.

I may add he found also methods of separating the rolls so that they would not bind or be wedged by the grain dropping between them when the rollers were at rest, which separation did not disturb their parallelism, and the material questions are, whether Gray's mode of securing these several adjustments are new in the art; and if they are found so, then whether the defendant has copied Gray or the older machines.

I do not deem it necessary to analyze all the prior devices put in evidence by the defendant, and which it is claimed show the same adjustments accomplished prior to Gray's invention by other inventors, it being, as I think, sufficient to consider the Nemelka Austrian patent, and the Nemelka French patent of 1875, and the Nemelka Lake English patent of 1877, together with some casual reference to other patents and descriptions found in the record.

Gray, in his first patent, provided for four adjustments, or what may be called adjustments. First, the vertical adjustment which was intended to bring the axis of the rolls into the same horizontal plane, which is not in question here.

2. The adjustment of the surface of the rolls to parallelism, that is, bringing their grinding surfaces parallel to each other, so that they would grind uniformly their entire length.

This it called "tramming" in the proofs, the work being imported into this art of milling from the older art of grinding with mill-stones where it was necessary to bring the grinding surfaces of the stones into perfect parallelism with each other, in order that they might grind uniformly all the grain that passed between them.

3. The device for spreading the rolls apart or throwing them out of working position to prevent their becoming wedged or bound by the grain dropping between them without disturbing their adjustment for parallelism of their vertical adjustment.

4. And adjusting the pressure of the spring so as to hold the rollers with sufficient rigidity together for the purpose of grinding, and at the same time allowing them to yield when any unusually or unexpectedly hard substance should come between them.

And the devices of this patent which are here brought in question all have references to these adjustments.

An examination of the Nemelka devices as exhibited in his Austrian and French patents and in the English patent to Lake, and in the model of the French Nemelka patent, which is before the court and was used upon the hearing, shows that each of these adjustments is provided for in those patents, and by substantially the same instrumentality which were adopted by Gray, although somewhat differently placed or modified.

For illustration, Gray provided for the vertical adjustment by a cam or eccentric working upon the pivot to which the swinging arm carrying the movable roller was attached to the frame, while Nemelka accomplished his vertical adjustment by a screw worked by a worm, which for the purpose of the question here must, I think, be considered the equivalent of Gray's cam or eccentric. Nemelka also showed a swinging frame carrying a movable roller, with a cam working upon the pivot by which the swinging frame was fastened to the fixed frame by

means of which the rolls could be separated without disturbing their parallelism and a provision for adjusting the rollers to parallelism by sliding the pivotal attachment upon the fixed frame.

He also shows a spring to hold the movable roll to its grinding position and pressure, with means for regulating the pressure of the spring and the grinding distance by means of cams, screws and nuts, and I cannot resist the conclusion that all Gray did by his first patent, under consideration, was to secure the same adjustments which are shown in these prior machines by, in many respects, the same instrumentality, but differently located, or well known equivalents of such instrumentalities. The special feature of Gray's second patent, by which his two rods G, are moved inwardly and outwardly by the operation of the cam, to which they are connected at their inner ends, whereby the rolls are thrown apart without disturbing their grinding adjustment is also shown in the Nemelka French patent, and it is there accomplished by the use of cams not working upon the ends of transverse rods like Gray's rods G, but working upon pivots by which the swinging frame is pivoted to the fixed frame. These cams being connected so that they were operated simultaneously by the movement of the shaft.

So that I find in the older devices all that is covered by the two patents to Gray.

The Odell patent shows only a device for separating the two set of rolls of the double roller mill by one movement, and I am compelled to say, that I cannot conceive that it required invention to connect the shaft by which the cams in one movable roll in a double mill. The ordinary and well-known device by which all the bolts in an iron safe door are shut by the movement of a single lever, seems to me to be fully explained by the testimony of the defendant's expert witness.

The Birkholz patent seems to me to be only another form of Gray's first patent. I see nothing in his connecting a swinging frame by his rod F to essentially differentiate that device from the device shown in the first and second patents of Gray, except that he shows only one rod and locates that below the rolls instead of above, which does not seem to me to be a patentable difference.

But if there were room for doubt in the question whether there is any patentable difference in the device of Gray and of Birkholz I shall be constrained to find from the proof that the defendant does not infringe this patent as I can find nothing in the defendant's structure which corresponds to the rod F even in function or location.

I will say further that if I deemed it necessary to enter upon that field of the case I think it is fully demonstrated from the defendant's proof that the defendant's devices for securing the adjustments in their mill, substantially the same as are secured by Gray, so far different from Gray's as that no infringement can be charged against the defendant.

The defendant's mill No. 2 contains a swinging frame carrying the movable roll, but does not contain the rod G of the Gray patent with the cam operating upon the end of it, and does not secure the spring pressure to hold the roll in working position by a spring located upon such rod. The defendant secures the movement of separating its rolls without disturbing their parallel or vertical adjustment by a cam located in the pivot by which the swinging arm is attached to the frame, while Gray gets his movement by what is practically the elongation of the rods G by means of the cam at their end.

I have been very much embarrassed in the examination of this case by the opinion of the learned judge of the Eastern District of Michigan in the case of this complainant against Coombs, reported in 39 Fed. Rep. 25 decided in May last. I have carefully considered that opinion and the proofs which were submitted to the court in the case, sincerely hoping that I might be enabled to arrive at the same conclusion with the learned Judge who tried that case, as I think that no one is more anxious than myself to preserve and act upon the rule of comity, which, it seems to me, should prevail between the Federal courts in cases involving the same patents, but after mature and careful consideration I feel constrained to say that my reading of the prior of the art satisfies me that Mr. Gray in effect invented nothing. He merely adopted well-known equivalents for the mechanism known and shown in the prior art for producing the same adjustments which are secured by his machine and operating substantially in the same way. And I do not see that Gray from the proof before me had any right to be claimed as an original inventor and entitled to invoke the doctrine of equivalents in regard to his mechanism in any respect. He came into the art at so late a date, and when others had covered the same ground which he attempted to cover, that if his patents are to be sustained at all, they are to be sustained only for the special devices which he shows and which I am clear the defendant in this case does not infringe.

I may further say upon this point that the rule of comity perhaps ought not to be invoked by the complainant here to the same extent as in most cases where it has been applied, for the reason that in the case of this complainant against Freeman, heard before the learned district judge of the Western District of Wisconsin several years since, that court upon the testimony which is before this court, in these French and English patents, held that Gray's patent was invalid for want of novelty and dismissed that case. So that we have here a decision in this circuit against the complainant, pressing with equal binding force upon us, as does the decision relied upon by the complainant from the Eastern District of Michigan. The bill is dismissed for want of equity.

Endorsed: Filed Feb. 10th, 1890.

WM. H. BRADLEY, Clerk.

ALL persons desiring to reach the entire milling and grain trade of America, by circular or otherwise, should obtain a copy of CAWKER'S AMERICAN FLOUR MILL AND GRAIN ELEVATOR DIRECTORY FOR 1890-91.

N EWS.—Globe Milling Co., Watertown, Wis., will overhaul and increase capacity of their lower mill, making it a first-class 450 bls. mill. The new machinery has all been ordered from E. P. Allis & Co., of Milwaukee.

BURNED, Jan. 23, A. D. Sprague's mill at Caledonia, Minn. Loss \$10,000; no insurance.

BURNED, Jan. 18, Jos. Williams' mill at Glen Williams, Ont. Loss 8,000; insurance \$6,000.

AT Payne's Mills, Ont., Jan. 28, Duncan Walker's grist mill was burned. Loss, \$10,000; insurance, \$2,000.

THE Donahue & Henderson flour mill at Vermillion, S. Dak., burned on the morning of Jan. 30, loss \$15,000; no insurance.

HASTINGS BROS. & MCGRAW are adding new machinery to the Lake-of-the-Woods Mill at Keewatin, Ont., which is now operated by them.

THE O'Neill Roller Mills at O'Neill, Neb., burned Feb. 14th, with elevator and stock including 3,000 sacks of flour. Loss \$50,000, Insurance \$24,000.

AT Broockton, Tompkins County, N. Y., Jan. 28, Vorhis Bros' steam flour mill was burned. The loss is \$8,000; insurance, \$4,000 in the Millers Association.

NEAR Scottdale, Pa., Feb. 9, F. Bruner's large flouring mill was destroyed by fire; originated from a stove. Loss is estimated at \$5,000 to \$6,000; no insurance.

AT Whitener, Madison Co., Ark., the extensive flouring mill of Whitener & Smyer, together with several thousand bushels of grain and a large amount of flour, was recently destroyed by fire. Loss, about \$20,000.

ON the night of Jan. 28, the Muskegon City Mill at Muskegon, Mich. burned. It was owned by Henderson & Fraser. Loss estimated at \$19,000; covered by insurance. A hot box is supposed to have been the origin of the fire.

A BOILER exploded in the mill at Hallowell, Kans., Jan. 23, fatally wounding the owner Mr. Earls, the engineer, Mr. Maybury, and severely injuring the fireman. The mill was wrecked. Boiler said to have been an old one and in poor condition.

THE C. C. C. & St. L., Big Four and other Vanderbilt lines in Indiana and Ohio are about to be legally consolidated and entirely welded together under the cover of a Connecticut corporation formed by Sidney Dillon and other Wall Street magnates.

NEAR Caledonia, Minn., Jan. 23, the roller-mill of A. D. Sprague, located in the Winnebago Valley, was burned. The mill, including the warehouse, is a total loss. The miller thinks the fire started in the dust-room from the chimney. The loss is \$20,000, without insurance.

THE MANUFACTURE OF SPLIT PEAS.

The first part of the process consists of soaking the peas in a tank of cold water, or water slightly tepid if the weather should be cold. This must be continued until the farinaceous part within the hull is moistened and swelled, when the hulls, being oily and less affected by the absorption of moisture, will burst and be loosened by the unequal expansion. The water is then drained off and the peas elevated to a floor where they are spread out until the superfluous water is dried off, when they are afterwards thoroughly dried in a kiln. This drying must be accomplished without contact with smoke, or the color and flavor of the peas will be injured. Instead of the old-fashioned expensive kiln, a cylinder drier—a machine resembling a coffee roaster is used. After being dried and cooked, the peas are split and hulled between mill-stones, with "stiff balance irons," which finishes the process, except that the hulls must be separated from the peas.—*Millers' Review.*

A NEW METHOD OF TREATING DISEASE.

Hospital Remedies.

What are they? There is a new departure in the treatment of disease. It consists in the collection of the specifics used by noted specialists of Europe and America, and bringing them within the reach of all. For instance the treatment pursued by special physicians who treat indigestion, stomach and liver troubles only, was obtained and prepared. The treatment of other physicians celebrated for curing catarrh was procured, and so on till these incomparable cures now include disease of the lungs, kidneys, female weakness, rheumatism and nervous debility.

This new method of "one remedy for one disease" must appeal to the common sense of all sufferers, many of whom have experienced the ill effects, and thoroughly realize the absurdity of the claims of Patent Medicines which are guaranteed to cure every ill out of a single bottle, and the use of which, as statistics prove, has ruined more stomachs than alcohol. A circular describing these new remedies is sent free on receipt of stamp to pay postage by Hospital Remedy Company, Toronto, Canada, sole proprietors.

M. N. A.

Proposed New Constitution.

A recent meeting of the executive committee of the M. N. A. in Chicago. Messrs. A. C. Loring of Minneapolis, Minn., M. S. Blish of Seymour, Ind., and Henry C. Yaeger of Carlinville, Ill., were appointed as a committee to draft a new constitution for discussion, amendment or alteration and adoption at the next annual meeting in Minneapolis, in June 1890. The committee desiring to have the matter thoroughly considered by millers everywhere, have authorized its publication so that those present at the next meeting may be fully prepared to state their views. That this will be done freely by millers from all sections, we have no doubt. The sections which will probably cause the most arguments are set in italic. We hope every miller will study the matter carefully and act with a view towards building up an association, which will be of practical benefit to the entire trade in this country. We do not feel that it is within the line of our duty to either praise or condemn all or any part of the constitution submitted. If good, unbiased judgment is used, and a good constitution obtained, the life and value of the Miller's National Association is fully assured. The following is the document as submitted:

DECLARATION.

This Association is formed for the purpose of promoting the welfare and prosperity of the millers of the United States; for mutual protection against patent litigation; for securing uniform action in all matters affecting the general good of the trade; for correcting the abuses which hamper it, and for encouraging and building up a common union for the common good.

CONSTITUTION.

ARTICLE I.

Section 1. This Association shall be called the Miller's National Association of the United States.

ARTICLE II.

Section 1. Any person, firm or corporation engaged in milling in the United States may become a member of this Association upon signing an application for membership, wherein the name, capacity and location of the mill are correctly stated, with the understanding that said Association shall not be called upon to defend any patent suits already commenced; or any suits on machinery in the said mill commonly and publicly regarded as infringements, which may be thereafter brought; and also that said applicant accepts the provisions of this constitution and agrees to the non-transferable character of the membership certificates.

Section 2. Such application must be accompanied by a sum equal to ten dollars for each hundred barrels or fraction thereof advertised capacity of the mill or mills owned, controlled or operated by applicant. It must be delivered to the secretary who shall present it to the executive committee at its first meeting after date of application. If application is approved by the executive committee the applicant becomes a member of this Association.

Section 3. Immediately after the approval of the executive committee has been given to an application, the secretary shall furnish the new member with a certificate of membership.

Section 4. Certificates of membership shall be transferable only to the successor of the owner or operator of the mill specified. No holder thereof shall transfer his certificate to any other mill of which he may become the owner or operator, except in case of removal of machinery from one plant to another, or in case of rebuilding after destruction by fire or other cause, in which cases the certificate of membership may be altered to correspond with the new mill or new location after approval by the executive committee.

Section 5. Members of this Association may send one delegate to the annual meeting who shall have power to cast one vote for each unit of capacity (100 barrels) or a fraction thereof, represented by their membership certificate.

Section 6. Such delegate must be an owner, officer, director, trustee or member of a firm doing a milling business.

Section 7. Delegates may vote in person or by proxy. Proxies must be given in writing and are null and void if presented by any one rendered ineligible by the provisions of the preceding section. All votes shall be viva voce unless voting by capacity is demanded by a delegate.

Section 8. Certificates of membership shall be issued to all mills which are represented in the Association by members in good standing at the time of the adoption of this constitution, without cost to them.

ARTICLE III.

Section 1. The administration of the affairs of this Association shall be vested in its officers, a board of directors and an executive committee.

Section 2. Each state is entitled to one director for each 250 units of capacity (25,000 barrels) or fractions thereof represented by its members in the Association, and the board of directors shall consist of as many members as the states may elect on this basis of representation.

Section 3. Directors shall be elected by the members from each state according to the number to which it is entitled, on the first day of the annual meeting of the Association and shall continue in office until their successors are elected. In case of the resignation or death of a member of the board of directors, the president of the Association shall appoint a director from the state wherein the vacancy occurs to serve until the next election is held.

Section 4. Members of the board of directors shall meet immediately after their election and elect an executive committee of six from among their number. The president of the Association shall be an ex-officio member of this committee. Seven directors shall constitute a quorum.

Section 5. The executive committee shall meet every four months in the city of Chicago and shall be further subject to the call of the president of the Association. Three members of the executive committee shall constitute a quorum.

Section 6. The executive committee shall have general charge and direction of the affairs of the Association and shall direct the secretary and treasurer in the discharge of their duties. It shall have full control of the finances of the Association, and shall determine upon all points affecting its policy. It shall be empowered to order suits brought or defended and to employ legal assistance when deemed advisable. It shall have authority to order assessments from time to time and to instruct the secretary to draw on members for such assessments. It shall appoint annually a secretary at a certain fixed salary. The chairman of the executive committee shall make an annual report to the members of the Association showing the transactions of the committee for the year in full.

ARTICLE IV.

Section 1. The board of directors shall, at its annual meeting, appoint from among the members in good standing the following committees of five each to serve for one year:

- A committee on patent litigation.
- A committee on transportation.
- A committee on export trade.
- A committee on domestic trade.

Each of these committees shall meet immediately after its appointment and elect a chairman who shall call a meeting of his committee at such times and places as he may deem desirable.

Section 2. The committee on patent litigation shall investigate all claims for infringements brought against members of this Association, and report on same with their advice and opinion as to the merits of the case and the policy to be pursued to the executive committee.

Section 3. The committee on transportation shall investigate cases of unjust railway discrimination, unwarranted delays in transit, improper delivery of freight and matters affecting the shipping of flour by rail or steamer brought before it by members. It shall have in charge all questions as to bills of lading, both foreign and domestic, and shall report on such matters to the executive committee with advice as to the proper course to pursue.

Section 4. The committee on foreign trade shall have in charge questions affecting the relations of the miller and the foreign buyer. It shall examine into cases of unjust arbitration on American flour in foreign countries brought before it by members. It shall investigate claims of millers against foreign buyers. To it shall be referred all recommendations, suggestions and complaints of foreign flour handlers regarding American flour. It shall report on such matters to the executive committee with advice as to the action recommended.

Section 5. The committee on domestic trade shall investigate and report with its recommendation to the executive committee on all complaints of domestic buyers brought before it by members. It shall consider all cases of tricky and irresponsible dealers, cancellation of orders on flimsy pretexts, delays in domestic transit, brand imitations and all other matters affecting the domestic flour trade.

Section 6. The president of this Association shall be elected at the annual meeting of the Association and shall hold office for one year. He shall preside at all meetings of the Association, attend all meetings of the board of directors and the executive committee. He shall be an ex-officio member of both.

Section 7. The first vice president shall be elected at the annual meeting of the Association and shall hold office for one year. It shall be his duty to act in place of the president in his absence.

Section 8. The second vice president shall be elected at the annual meeting of the Association and shall hold office for one year. It shall be his duty to act in place of the first vice president in his absence.

Section 9. The treasurer shall be elected at the annual meeting of the Association and shall hold office for one year. He shall receive all monies due the Association and shall disburse same on warrants signed by the secretary and countersigned by the president. He shall make an annual report to the Association showing its exact financial condition.

Section 10. The secretary shall be appointed by the executive committee and shall act under its direction.

ARTICLE V.

Section 1. The annual meeting of the Association shall be held at such times and places as shall be determined by the executive committee. Special meetings may be called by the executive committee if in its opinion circumstances require them. The executive committee shall arrange order of business in advance of a general meeting.

ARTICLE VI.

Section 1. The expenses of members of the executive committee to and from all general and special meetings of the Association and regular called meetings of the executive committee shall be paid by the Association. Such expenses shall include only railway fare to and from such meetings and hotel bills during continuance of meeting, at a rate not to exceed three dollars per day.

Section 2. The expenses of the president, while traveling on business of the Association shall likewise be paid, same to include

only railway fares and hotel bills at rates named in preceding section.

Section 3. The expenses of all regular and special committees authorized by this constitution or appointed by the executive committee shall be paid at the same rate and on the same conditions as those of members of the committee itself.

ARTICLE VII.

Section 1. The annual dues of this Association shall be two dollars per 100 barrels capacity. They shall be payable on the fifteenth day of January of each year.

Section 2. The secretary shall make sight draft for annual dues on date above stated. Should such draft be unpaid the member so drawn upon stands suspended until the following annual meeting where the names and amounts due and unpaid shall be read and such members shall be dropped from the Association. Notice of contemplated action shall be given to members in arrears thirty days before the annual meeting.

Section 3. The executive committee shall have authority to remit the annual dues for members who appeal to it and may at its discretion make exceptions to the provisions of the preceding sections relating to annual dues.

ARTICLE VIII.

Section 1. This constitution may be altered or amended at any annual meeting by a two-thirds vote of the members present. The proposed amendment must be submitted to the secretary at least thirty days before the annual meeting and he must notify members by mail of the proposed change.

A LETTER FROM J. M. CASE.

London, Jan. 7, 1890.

DEAR FRIEND CAWKER:

* * * I have become associated with Messrs. E. R. & F. Turner of 82 Mark Lane, with factory at Ipswich. They are an established firm of a hundred years' standing, and have the best plant I have so far seen in Europe for turning out machines rapidly and cheaply. They took over the business of Mr. Carter about a year ago and have not yet reached that position which I think they will soon attain as the first mill-builders in Europe.

I have been traveling among the mills considerably of late, visiting many small millers who are just waking up to the necessity of rolls. These small mills of which there are a great number, are nearly all built after substantially the same pattern, and are principally by run undershot and breast-wheels. The buildings are of primitive design with low ceilings. You generally enter the front door by stepping down about two feet. The mills were probably originally built upon a level with the street, but the accumulating dust of a century or two around the front door, has raised the earth above the mill floors and instead of removing this and keeping the floor on a level with the roadway, they provide an inclined walk down into the mill. In entering you must humbly bow or remove your tile in case you wear a tall hat. On this floor there is generally nothing but the pit-gearing and bins for offal and flour bags. You next ascend a stairway of 90 degrees elevation, about two feet wide, with steps two inches in thickness, which from the constant tramp of years has been worn in two places just the width of the miller's stride. On the side is an inch rope to which you can cling to keep from falling backward. Landing upon the next floor you undertake to replace your hat, but find that the mill was never designed for plug hats, nor for long-legged millers; your bare pate brushes the joists, and you are compelled to walk in a stooping attitude. On this floor are two or four millstones, arranged around one common spur wheel; also one or two bolting chests, generally from 22 to 24 feet long and 4 feet in diameter, with single conveyors. This together with the cleaning machines and millstones constitute the equipment of the mill. They grind about 3 to 4 bushels per hour on each stone, which is bolted through No. 7, 8 and 9 cloth.

The head millers in these old English mills are generally very short fat fellows. The mills are not adapted to a long-legged man, and so they get men to suit the mill, and they generally stay for a life-time. Some of the under-men have the misfortune to be tall, and so for years are obliged to walk bent over, and when they go out of the mill they forget to straighten up and

so through life go bent over like a new moon. These generally are the helpers not the millers.

The English miller is the typical man we have seen pictured and read about so often. He is generally a happy looking individual, and his daughter of whom we have also frequently read of in poetry and prose, is as pretty as usually pictured. Her face glows like a ripe tomato and her eyes are often of that violet blue shade so much admired, and so seldom seen in America. From frequently running up the stairs in her fathers mill she has acquired that graceful, bracing movement in walking which reminds one of the well trained young midshipman.

One noticeable thing about the English miller is the fact that he and everything about him is fat which includes his family and his stock. I have come to the conclusion that England is a fortunate place for the animal creation to be born in, for animals of every description are treated with kindness and consideration. Even the fleas in London boarding houses are permitted to enjoy the apartments undisturbed, and soon attain a blood relationship and social equality with all in the house. My wife however protests vigorously against the social equality but could not deny the blood relationship.

The millowner and the miller in England are two distinct individuals. The millowner never runs the mill himself as is the case with most small mills in the states. The wages of a miller are generally not over \$6.00 per week, and the millowner can better afford to hire a miller than to give him his own time to it.

A fairly equipped Englishman's house (a millowner of a 100 bbl. mill) would be as follows: Head miller, second miller, two helpers, gardener, two or three carriages, three house servants, one governess, one nurse, a modest cheerful wife and on the average one son and five daughters. The home is regulated with precision. The little ones must retire at generally 7 P. M. The next older may stay until eight and the young ladies until nine. They also arise at a stated hour bathe and dress for breakfast.

In short the English millowner and miller enjoy themselves. They live for comfort and their homes are models of happiness and contentment.

I am glad to note such a marked improvement during the past year in the UNITED STATES MILLER. With kind regards and wishing you a happy and prosperous year I am. Yours faithfully,

J. M. Case.

HOW NIAGARA IS TO BE HARNESSSED.

FURTHER particulars of the device selected by the Buffalo International Fair Association for utilizing the water power Niagara Falls are published. The plan proposes the excavation of a cavity or drift at the foot of the falls, in front of which the flow of water will be continuous and of sufficient depth to carry over all flow of ice without striking the device. In this recess upon stone foundations will be a stationary iron truss frame, upon which, on wheels, will be a traveling truss frame sufficiently heavy to carry the water wheel and other paraphernalia, this consisting of an over-shot wheel sixty feet in diameter, several monster dynamos and the gearing necessary to work them. The traveling frame will be moved by hydraulic pressure to engage or disengage the water-wheel with the falling water. This is said to be entirely feasible, hydraulic pressure being used to move the heaviest ordnance and other great weights. Such a machine is calculated to develop over 16,000 horsepower, and the electricity generated might be transmitted to considerable distances for use in running machinery and lighting. The inventor of this device is Mr. M. Maginn, a mechanical engineer of Chicago, to whom out of 150 competitors, was awarded the gold medal offered by the Association.

[From our regular Correspondent.]

OUR BUFFALO LETTER.

THE sensation of the year in the grain trade was the failure, or rather suspension, of the firm of A. P. Wright & Sons. This is one of the oldest if not the oldest grain houses in the city. A. P. Wright says he has become tired of losing money and will stop for a while. Just what really caused the suspension puzzles the other grain dealers here. The Wrights were known as "plungers" in speculating circles and have been doing nothing worthy of mention in the cash trade, apparently relying on the brokerage department, which was under the management of Mr. Robert Newell. It will be news to most of your Buffalo readers when they read that the Wrights lost their grip in the Fairbank's wheat corner a year ago and since then it has simply been a bailing out process so well known to speculators who will hang on when luck is surely against them. In that deal the great cash sale of 600,000 bushels of hard wheat to a syndicate of our millers was to be used to bull the market, but "Old Hutch," it is said, had it in for the crowd and instead of advancing, the price of wheat steadily declined. For the privilege of handling this heavy amount of grain Wright & Son were to receive no commissions, but when the bill was rendered to the syndicate, $\frac{1}{2}$ ¢ per bushel was charged and the matter is in court now, the case being Schoelkopf & Matthews and A. R. James vs. A. P. Wright & Son. No assignment has been filed so that it is impossible to give any figures at present. A. P. Wright & Son were generally considered worth from one half to three quarters of a million about two years ago, but heavy losses weakened them so that one of the mercantile agencies refused to give them a rating.

The canal agitators have received a rap which will create dismay among them in the bill introduced a few days ago in the legislature fixing the rates to be charged on grain during 1889. This bill makes the rates for the season as follows: wheat and flaxseed, 4 cents; corn; 3 $\frac{1}{2}$ cents; rye, 3 $\frac{1}{2}$ cents; barley, 3 cents; oats, 2 $\frac{1}{2}$ cents; timber from Tonawanda to New York \$2.00 per M feet; up freights, 50 cents per ton. Thus, are the elevators heaping coals of fire on the heads of these blatant blatherskites and in the same manner will they pour boiling water on them to quench the blaze. The elevator authorities of course deny all knowledge of the authorship of this bill. If the McEvoy elevator law which fixes the charges for elevating grain in this state is constitutional and just, this new bill is also, and therefore should pass, as I believe it will.

On 'Change the great subject now is the new rules which went into effect Feb. 1 charging \$1.00 per day, per car demurrage for merchandise remaining on the track after 48 hours. An indignation meeting was held last week and the charge condemned as unjust and in the nature of another discrimination against Buffalo grain dealers. The freight bureau of the Exchange advises the "kickers" to take things easy as it is the intention of the agents here to bring all the evils of our most miserable railroad service before the superintendents of the roads at once and drown them all together.

There is at present a bill before the legislature introduced by Senator Simson which provides for the establishment of four floating grain elevators to be run for the state and fixes the

charges at $\frac{1}{4}$ cent per bushel. The iniquitous McEvoy bill was not sufficient for the foolish canal agitators, they must go the whole hog. Elevator men do not care a straw for such law and will not turn a hand to prevent their enactment. The canal alone will suffer and the state foot the bills for both repairs to the great waterway and for the maintenance of the elevators. Not one penny will be earned by them, as cargos are sure to go where the best facilities for transfer are offered and in no case will responsible consignees trust to "political heelers," under whose control these elevators must be.

The flour trade is positively dull and has been so for a month. Millers are amply supplied with stocks of flour for any emergency, in fact never more so. "Shutting down for repairs" is all well enough as an excuse for a week or two; but no one expected wheat to keep on gradually sinking as it has done for the past two weeks. Dealers will not take hold on a declining market, and the chances are too many for the miller at the present stage of the game. The present rate of decrease in our supply of hard wheat is astonishing dealers here. On the 12th instant there were just 850,000 bushels of Duluth wheat likely to come on the market of the present stock in store. New York took 350,000 bushels between the 10th and 13th with a number of orders slightly under the market yet in hand. This will leave us wheatless in a week, if continued. Besides with a good demand for flour we could use all the wheat on hand at the present time before supplies can possibly reach us in the spring. It is really a serious state of affairs and our millers are beginning to realize it.

Millers report a good demand for feed, and owing to "stoppage for repairs" and light receipts the local supply is exceedingly light. Coarse winter bran easily brings \$12.00, \$12.50 and \$13.00, and fine midlings \$14 and \$15 per ton. Rye feed for which there is a good demand, is selling at \$13 per ton.

The first intelligence of the improvements to be made by the New York Central Railroad in its dock property here will be learned through the UNITED STATES MILLER. This company owns the city A and city B elevators, the former being the old city elevator and the latter the Plympton or Tift. An addition having a capacity of 300,000 bushels will be placed on the west side of the city A, with a movable "leg" so that any sized vessel can be unloaded in just half the time it takes now. City B elevator will be razed to the ground; nothing will be so much regretted by our millers. This store-house is absolutely fire-proof and not a pound of wheat is ever taken from it until the other elevators have been emptied, as no insurance is necessary; besides the wheat with which it is always filled is known to keep in better condition than in wooden structures. This elevator cost \$650,000 before it could be used for storing grain and was in a measure an experiment—a costly one to its proprietors. The peculiarity of the house is that it has an air space of nearly a foot around each bin, and it is said that this is one of its weakest features, as the bins when filled show a tendency to bulge until support from the next wall is reached. Besides this the huge pile of brick has only a capacity of 300,000 bushels, and not over 200,000 if working room is needed. The Central road requires more dock front, and this elevator blocks the way for package freight steamers, so it must go. In its 25 years of service it is doubtful

whether the investment has paid 2 per cent. altogether. The Central road paid something like \$350,000 for it and adjoining property, the latter being more valuable than the elevator.

Mr. L. A. Andrews was in town last week in search of a partner with sufficient capital to engage in the manufacture of oatmeal, and other farinaceous goods. He holds, (or at least Buffalo does,) out bright prospects for a mill of that kind, and no better-paying investment could be thought of. Freight rates by water and rail are all in our favor for receiving the raw material and distributing the product. At present Mr. Andrews is located in Canada, where he is doing a good business, but finding so many of his customers on this side, he is of the opinion (as are thousands of others in Canada,) that the "land of the free" would pay him better, for the knowledge of the business he has acquired during his twenty years experience in this trade. The Oatmeal Combination may have a word to say against all this, but Mr. Andrews says he has been buying American oats, on which he paid a duty to the Canadian Government, shipping the oatmeal to this side for which Uncle Sam makes him pay \$1.00 per bbl. and has been able to compete with the trust. So he thinks he can manufacture oatmeal as cheaply as they, if not cheaper.

George Urban's natural gas well on Oak street near his mill has gained a pressure of 45 lbs. and will be a paying one as soon as it is torpedoed. The pressure of gas at an ordinary meeting of the trustees of the Merchants Exchange is a few pounds more when George "stirs up the animals."

Messrs. Harvey & Henry "the tall millers of Buffalo" will also put down a well this month to supply the boilers of their mill. Mr. Henry of this firm should be known as Patrick Henry instead of "Joe" for his motto is "give me success or give me failure." When the *United States Miller* reaches the Merchants Exchange I venture to say that three rousing cheers will be given for "Pat" Henry on his first appearance.

BUFFALO, Feb. 15, 1890.

MILLING AND MECHANICAL NOTES.

[Condensed and compiled from various sources for the UNITED STATES MILLER AND MILLING ENGINEER.]

THERE never was an explosion that was not preventable, and with modern safety appliances and a careful engineer, explosions may be classed as a remote contingency.—*John W. Sweet.*

It has been stated that in France they now use for steam and water-pipe joints, gaskets made of wood pulp, which are boiled in linseed oil. They give satisfactory results, and are not subject to decomposition at high temperature.

An exchange says that a new process for burning coal without smoke has lately been discovered. It consists in sprinkling water containing a special preparation of resin over the coal, and the result is that there is no smoke, and the glow is as intense as coke. An English company is to be formed to work the new patent.

THE *Ungarische Muehlen-Zeitung* of Budapest, Austria-Hungary, reports the discovery of bacillus, supposed to be a potato bacillus, which works injury to Graham and other bread. Vienna experts are investigating the subject further. In the mean time Prof. Comstock, of Cornell University, Ithaca, N. Y., has discovered a new wheat insect pest which he calls the "saw-fly borer."

HOW TO COOL OFF YOUR BOILER. After the water is all blown out, open the man-hole, or the hand holes at the top and

bottom; close the flue caps and open pipe damper and the draft will then pass through the boiler, cooling it. The cleaning process can be carried on at the same time. This is a much quicker way to cool a boiler than by filling it with cold water. At the same time the furnace may be cooled, by leaving the ash pit doors open. Try it when getting ready for inspection.

But that is not quite all, the five-bushel miller has not only got a brand of flour that the trade of which will stay with him, provided he stays with it, but he has also got a brand of feed that will be a seller always. I fancy I can almost hear some of the low-yield millers smile at the suggestion of running a flour mill to make good feed. And why not? Is not the feed a part of the mill product that has to be disposed of the same as the flour? Why certainly it is, and it must be disposed of in order to make the business pay or to run at all. Feed of various kinds is a product of the mill, the price of which is somewhat regulated by its quality, or if there be no difference in price, the best will be sought after while the inferior will be seeking a market.—*Merchant, Miller and Manufacturer.*

RECENT PUBLICATIONS.

THE holiday number of *The Tradesman*, Chattanooga, Tenn., a mammoth edition of 120 pages, is at hand. It contains a number of well written articles in the progress of industries in the South and some valuable statistics. A host of advertisers have wisely taken advantage of the occasion to place themselves before prospective southern consumers. If the progress of the south has been as real and solid as that of *The Tradesman* during the past years it certainly is marvelous.

SCRIBNER'S MAGAZINE for February contains another article in the African series, by Herbert Ward, for five years an officer in the Congo Free State; the first of two articles on John Ericsson, by W. C. Church, his chosen biographer; The account of a visit paid to several leading Spanish novelists, by an American novelist; a short paper on a very ancient image recently found in Idaho; a glimpse of several picturesque Hungarian castles as seen by the author of "Is Life Worth Living?" and interesting illustrated fiction and poems, with the new department, "The Point of View."

To be on intimate terms with one of the great dead and one of the great living, is the rare privilege vouchsafed by HARPER'S MAGAZINE for February. George Parsons Lathrop contributes "Talks with Edison," affording a vivid perception of "how an inventor invents," and preserving the kernels of many interesting conversations about Mr. Edison's early life and his progress toward invention. James Hogg gives to the public, for the first time his reminiscences of his intimate friend De Quincey. Portraiture of another kind will be found in the article on "The Standing Army of Great Britain"—the unconscious self-limning of the author, General Viscount Wolseley, K. P., etc. The fearless candor and vigor of his criticisms on English military administration, besides their intrinsic importance, have the added value of revealing the character of England's leading soldier. Mark Twain gives examples from the awful record of "A Majestic Literary Fossil." Lafcadio Hearn, the author of "Chita," concludes his new story, "Youma," which is sympathetically illustrated by Howard Pyle.

NIAGARA FALLS.

In the summer of 1888, Mr. Charles Graham, of New York, one of the finest aquarists in the country, produced a water-color of Niagara Falls, remarkable in its accuracy of drawing, in its marvelous coloring, in its masterly handling of tones and effects, all of which have been perfectly reproduced. As this point of view of this picture is near the Michigan Central's station at Falls View, and represents its vestibuled limited train at that point in the foreground, it obtained possession of the water-color and the copies made therefrom. The latter are printed in colors, 15 $\frac{1}{2}$ by 22 inches, upon paper 22 $\frac{1}{2}$ by 28 inches in size, and when framed cannot be distinguished from a genuine water-color save by an expert.

They bear no advertising, save what is involved in the title, "MICHIGAN CENTRAL TRAIN PASSING NIAGARA FALLS." A limited number of them will be furnished to the public at Fifty Cents each, which is very much below their commercial or their artistic value. They will be securely sent by mail upon a paste-board roll, without extra charge, but not more than two copies will be sent to any one address.

Address, with postal note or postal money order for the amount, O. W. RUGGLES, Gen'l Pass. and Ticket Agent, Chicago, Ill.

SAFETY-VALVES ON HEATING BOILERS.

THE proportion of the area of a safety-valve to the area of the grate, according to the United States rule, should be such that there is half an inch of valve area to each square foot of grate surface, when lever or dead-weight valves are used, and one-third of an inch of valve area to each square foot of grate surface when spring or pop valves are used. It has been shown by actual trial that when these proportions are observed, the valve is of sufficient size to prevent any considerable rise of pressure beyond the point of blowing off—that is, if everything is in good order. This rule, therefore, is a very safe one to follow.

In heating boilers, the valve area should be increased rather than diminished, because the class of help employed to run these boilers usually lacks the experience and intelligence of the class employed to run high-pressure boilers, and the necessity of seeing to it that all pertaining to such boilers is properly designed becomes correspondingly more urgent. But it would seem, judging from our past experience, that altogether too many people consider anything in the form of a safety-valve to be good enough for a heating boiler, and we found one boiler with a grate area of seven square feet, which had a safety-valve area of only 44-100 of an inch (or somewhat less than half an inch), when according to the United States rule the area should have been three inches and a half. If the safety-valve on such a boiler should at any time have to be depended upon to relieve the boiler, a dangerous rise of pressure would take place, the steam being unable to escape as fast as it is formed.

Another trouble in the safety-valves of low pressure boilers is so frequently met with, that it seems almost to be the rule even when the areas are properly proportioned. It is that the regular high-pressure valve and weight is used, so that even when the weight is pushed in as close to the valve as it will go, it takes a steam pressure of from twenty to forty pounds to raise it. In other words, the valve was made to use on a high-pressure boiler, and is so designed that it can be set to blow off at any pressure between forty and one hundred pounds, with the idea that this range would be all that would be required; and this being the case, forty pounds is the lowest pressure at which it can be set to blow off. The safety-valves and weights on all heating boilers should be adapted to the duty they have to perform, and the levers should be marked accordingly.

Let us consider any ordinary heating boiler. The maximum pressure carried is ten pounds, the pressure gauge registers up to twenty pounds, and the damper regulator is adjusted to ten pounds. Now let us suppose that through ignorance or neglect the draft doors are blocked open. The pressure rises, and the damper regulator cannot control it, when ten pounds are reached. The safety-valve should have been so constructed and set that it would blow at twelve or fifteen pounds, but with the ball pushed in, in too many cases it takes thirty-five pounds to lift the valve. The light diaphragms in the damper regulators are broken, and the pressure gauge is destroyed or strained.

The weight of the lever and valve, ordinarily, will balance about two pounds of internal pressure, and the weight placed on the lever should be such that when it is pushed in close to the valve, the boiler will blow off at five pounds or less. Then, if it is desired to set the valve to blow at ten pounds or fifteen pounds, it will be easy to do so by shifting the weight outward along the lever till the proper point is reached.

We have stated what can take place when valves are weighted as we frequently find them, and we will say, further, that just such accidents as these have come

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THE MILLERS' NATIONAL ASSOCIATION.

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* Members of Sub-Executive Committee of National Association.

under our personal observation, and that frequently in our practice we are obliged to re-adjust valves by having light weights substituted for heavy ones. The only objection to this change is that the point at which the valve blows off will no longer correspond with the marking on the lever. If those fitting up low-pressure boilers will call upon the valve manufacturer for valves weighted and graduated for low-pressure work, they can easily procure precisely what is needed.—*The Locomotive.*

DULLNESS AND DEPRESSION IN THE NEW YORK FLOUR TRADE.

The dullness and depression that has existed in the flour trade for the past two months is without precedent in the memory of the oldest dealer. It extends not only through the export trade, with the single exception of the West India branch of it, but to the entire domestic trade of the United States as well as of Europe. It had been supposed that while stocks in first hands were larger than in any former year, with the exception of last, when they were the largest in the history of the trade, they were smaller in second hands than usual this year. Hence the firmness with which dealers and millers held their stocks through December in the belief that after the new year came in, jobbers would have to buy freely to supply the local demand. The first month of the new year has come and gone: and, instead of the increased demand expected from the home trade as well as from Europe, both have been duller than in December. We have now entered the second month of the new year and the last of the winter with no improvement. The maximum consumption is always counted upon with minimum prices, and minimum consumption has never been experienced until this year, both at home and abroad, when prices have been as low as they have this year and nearly as low as two years ago, when they were the lowest on record. A careful inquiry among the dealers here has resulted in the almost universal answer that *la gripe* and the mild winter together are the cause. Dealers and millers' agents, who supply the local dealers about New York and through the eastern states, have been complaining for a month that they were unable to sell flour because there customers had plenty of stock on hand, bought in November and December which they had been unable to sell.

To further emphasize the anomalous condition of the trade, our city mills are not only extending their facilities and enlarging their capacity, but western millers have lately been here investigating the advantages of New York over the West by which they can command the West India and other export trade, with a view to building more mills here. One of the largest winter wheat millers of Ohio recently came here for this avowed purpose,

and looked our city mills all through and Staten Island all over, but returned without doing anything more. Some time since the largest miller in Chicago came here and without saying much, looked the same ground all over, and went home to send on a representative here, who has become a member of the Produce Exchange, but not for the sale of their flour. It is now reported on the Exchange as a fact that they have already secured a site on Staten Island, and will build another mill there the coming year. The reason given for this is that the inter-state law helps the New York millers, and gives them an advantage over the West which the West formerly had over New York by reason of the long and short haul clause in that law. While another new mill is thus counted on the coming year in addition to the Staten Island mill built last year, the old city mills have increased their capacity within a year nearly 1000 bbls. per day, making a total of 8,600 bbls. The Jewell Milling Company have not only made their mill of 1,500 bbls. capacity, but they are building a fine new dock of two stories, with a storage capacity of 20,000, making the largest mill dock and warehouse in the city.

Jones & Co. are building a 500-barrel addition to their mill, which will give them the largest mill in the city with 2,500 barrels daily capacity. This will be completed late this coming spring or early summer, when our total capacity will be 51,600 barrels weekly, or nearly 20,000 barrels more than it has been since Hecker dismantled one of his mills and the Atlantic Dock Mills were abandoned several years ago, when the business was overdone and unprofitable for the latest comers, who finally went out of it. The western millers seem to misunderstand the cause of the great activity of the past year with the city mills, and to regard it as a permanent thing, when everybody here knows that it was chiefly due to the doubling up of the South American demand on account of the failure of the last year's wheat crop of the southern half of the western hemisphere. This has already fallen off with good wheat crops this year, and the city mills have been able to keep running and hold prices up, simply because they were sold ahead for the West Indies.—*N. Y. Com. Bulletin.*

THE usual bran-new scheme for utilizing the water-power of the Niagara River is again projected. This time it takes the form of an immense tail-race to be dug parallel to the river for fifteen miles, with numerous cross canals or head-races running from the river, each one furnishing one or more turbines which will drive dynamos to furnish electric power. It is proposed to excavate the tail race by hydraulic power, on the same principle as hydraulic mining is done in the West.—*Chicago Journal of Commerce.*

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Edw. P. Allis & Co., Milwaukee, Wis., builders of complete Flour Mills, manufacturers of Flour Mill Machinery, and dealers in Supplies of every description. [Mr. 89.]

O. C. Ritter, Sta. A., Springfield, Mo., Patentee and Designer, Ritter's One Reduction Milling System. Full Roller Plants for small mills. [Aug. 10]

John C. Higgins & Son, 165 West Kinzie Street, Chicago, Ill., mfrs. of and dressers of Mill Picks. [Mr. 89.]

Robert Poole & Son Co., Baltimore, Md., manufacturers of Steam Engines, Water Wheels, Flour, Corn, Paper, Saw and Cotton Mill Machinery.

B. H. & J. Sanford, Phoenix Iron Works, Sheboygan, Falls, Wis., manufacturers of the "IMPROVED WALSH DOUBLE TURBINE WATER WHEEL." [Mr. 89.]

John C. Kilner, York Foundry and Engine Works, York, Neb., Mill and Elevator machinery of all kinds, Engines, Boilers, Pulleys, Shafting, etc. [Mr. 89.]

The Gutta Percha and Rubber Mfg. Co., 159-161 Lake St., Chicago, Ill., Belting and Rubber Goods. [Mr. 89.]

Richmond Mfg. Co., Lockport, N. Y., manufacturers of Grain Cleaning Machinery, Bran Dusters, etc. [89. Mr.]

N. Y. Belting and Packing Co., N. Y. Leather Belting Co., W. D. Allen & Co., Agents, 151 Lake Street, Chicago. [Apr. 89.]

W. G. Avery Mfg. Co., 10 Vincent St., Cleveland, O., Specialties: Avery Lever Belt Punches, Avery Seamless Elevator Buckets, Belting, Elevator Bolts, &c. [May 89.]

The H. J. Deal Specialty Co., Bucyrus, Ohio, Headquarters for Flour and Grain Testing Appliances, and Specialties for the Milling, Flour and Grain trades. [May 89]

A. B. Bowman, 823 Second St., St. Louis, Mo., manufacturers of Wheat Heaters.

Sprague Electric Railway & Motor Co., 16 and 18 Broad St., New York, Electric Motors, Electric Transmission of Power.

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Milwaukee Bag Co., No. 236 East Water St., Milwaukee, Wis., manufacturers of plain and printed Flour and Grain Sacks of all kinds.

B. F. Ryer, 66 S. Canal St., Chicago, Mill Furnisher, Bolting Cloths made to order.

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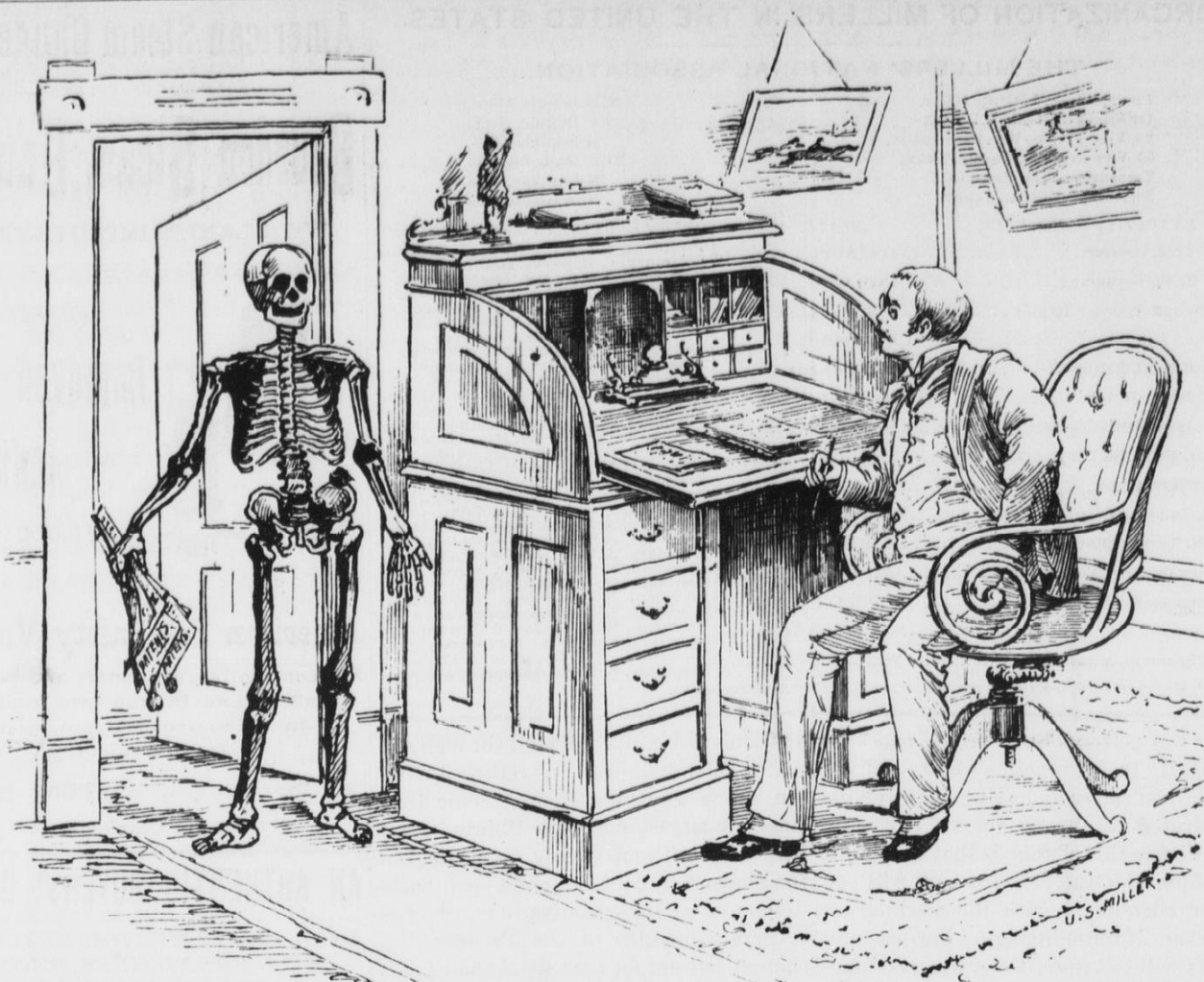
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Champion, Republic,	*2:00 A. M.	*3:25 A. M.
Iron Mountain, Menominee,	*2:00 A. M.	*3:25 A. M.
Marinette, Green Bay,	3:10 P. M.	3:55 P. M.
Depere,		
Green Bay, Depere, Apple-	2:00 A. M.	
ton, Menasha, Neenah,	7:55 A. M.	3:55 P. M.
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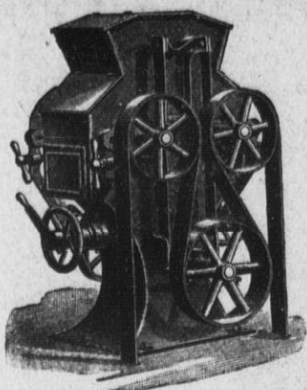
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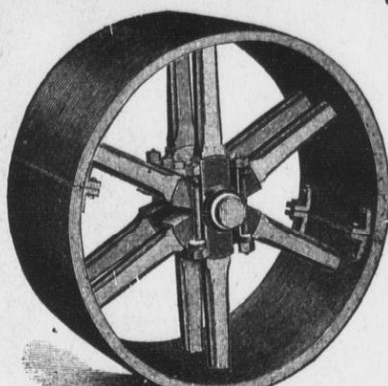
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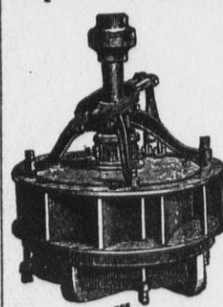
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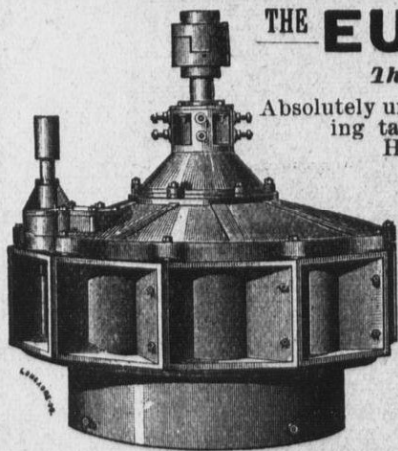
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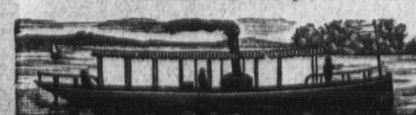
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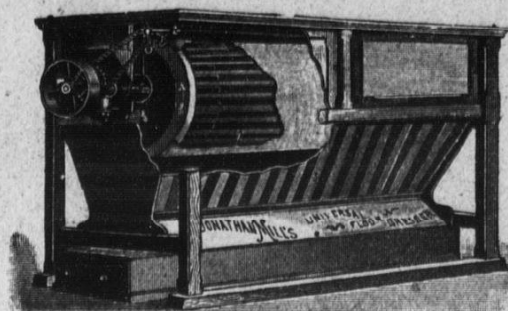
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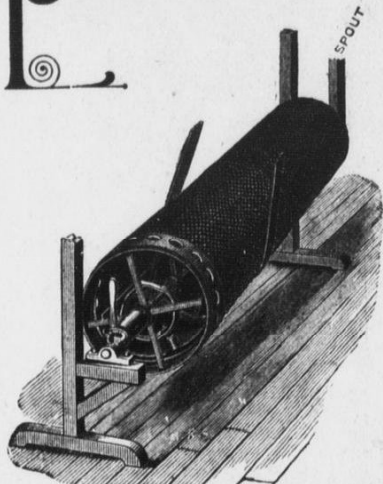
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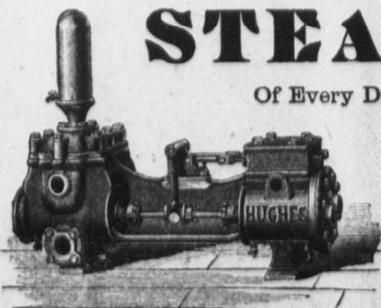
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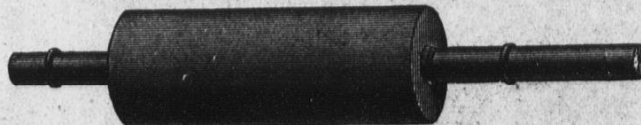
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